1. S&T EXCELLENCE

1.1. Challenge

1.1.1. Description of the Challenge (Main Aim)

The proposed project aims to enable the integrated cross-disciplinary study of Openness. The research related to different aspects of Open, whether software and hardware or content, data and innovation is constantly growing over the past thirty years. From a marginal phenomenon in the mid 1980s, Free/ Open Source Software (FOSS) has gradually grown to become a mainstream development and licensing practice. FOSS development methodology has not only influenced all types of software development, irrespective of their licensing model, but also suggested an alternative model for developing all types of products, services or projects. This model of a community based and decentralised form of organising production on the basis of modular components of variable granularity and some form of a commons regime came to be commonly referred in the late 1990s – early 2000s as the Commons Based Peer Production model. While the type and degree of restrictions to this commons spreads over a wide spectrum of options that make projects more or less open, and the platform or system that coordinates production more or less extractive, such forms of production have come to dominate most of the development activities over the last fifteen years. They have also given rise to forms of economic activity and production, such as the sharing or gig economy, that while sharing some of the mechanisms of the open model, they incorporate intense extraction and exclusion mechanisms that exploit the productive capacity of the ends of the network while they avoid the creation of a substantial form of commons.

In this context, research related to different aspects of the Open remains fragmented and focused on specific aspects of the phenomenon, e.g. software development methods, IPR and licensing models, political and social theory issues, while failing to present a comprehensive model both for methodologically approaching the phenomenon of openness and ontologically appreciating –without any essentialist reductions- its nature and boundaries to related but substantially different phenomena such as those included under the broader title of the sharing economy.

More specifically, key challenges in this context include:

- A comparison of the organising and development methodologies both in terms of different project areas (software, hardware, data, content) and sectors (private, non profit, government, science, research, education, public).
- A collection, analysis and comparison of the technical and procedural tools used for the support of open projects and comparison to the functionalities of sharing economy and crowdsourcing projects.
- A comprehensive analysis of different economic and business models behind different forms of open projects as well as open and sharing economy projects
- A theoretical analysis of the implications of open forms of production in our understanding of technology and media, particularly in terms of the strand of socio-materiality
- An analysis of the political and ideological projects behind open projects in juxtaposition to sharing economy projects, particularly in terms of media and political theory

Such challenges are of particular relevance at the European level. Increasing our epistemological and theoretical level of understanding of such phenomena is crucial for the development of a broader developmental model. Different approaches, both in terms of theoretical and methodological approaches and traditions, but also in terms of empirical data and cases, entail different results. Subsequently, their comparison and synthesis will lead to a more complete understanding of the phenomenon and better results for both theory and practice and, as such, interdisciplinary approaches from the fields of computer science, organisational theory, learning and education studies, sociology and philosophy of science and media theory is essential for the success of our endeavour.

1.1.2. Relevance and timeliness

This research action is of particular relevance to a number of disciplines from which the research involved will come. The comparison of different development methodologies will be beneficial for all types of projects in terms not just of tools but also of techniques, processes and results achieved; the understanding of different forms of digital commons and their production will enhance our understanding of their socio-economic value and operation, as well as our broader understanding of technology and society; media theory and post-internet art theory allows us a better appreciation of socio-economic

forms of organisation and political action, but also informs the ways in which we develop and use software; a 360 understanding of open-project development will shed light to open government and open innovation approaches that use the term open in a different fashion but still can draw substantial insights from each other; post-humanist approaches will allow us to design more effective and efficient but also more humane forms of production and consumption lines but also make us critical appreciate our techno-mediated contemporary habitat; finally, the comparison between open, the commons and the sharing economy will increase both our theoretical and methodological precision but will also substantially contribute to the design and implementation of better public and corporate policies.
The timelines of the project is to a great extent the result of the omni-presence of open, commons or sharing forms of development in constantly networked, big data/ AI mediated society where humans and machines collectively develop, collaborate and produce. Taking into consideration the ever-growing European policies related to digital technologies, such as the Digital Single Market, the 4th Industrial revolution policies, the platform economy policies, the European Open Science Cloud policies (with the emphasis on Open Data, Open Innovation and Open to the World), this research is also extremely relevant for the European Project and they way in which we approach it in relation to developments in other parts of the world.

1.2. Objectives

1.2.1. Research Coordination Objectives

This four-year action aims at the following general objectives:
- Definition and advancement of our understanding of the concepts of open, digital commons and sharing economy
- Mapping of methodological and theoretical approaches regarding organisational, socio-technical, media and policy aspects of open, digital commons and the sharing economy
- Development of different methodological and theoretical tools for the study and application of different aspects of open, digital commons and the sharing economy
The action will also have the following specific objectives:
- Work of coordination to survey theoretical and empirical models for the study of open in juxtaposition to the sharing economy
- Development of a series of theoretical and empirical models on the following areas:
* Variations of the model of Commons Based Peer Production across contexts and areas
* Hybrid Market, Hierarchy and CBPP models with emphasis on the differentiation in terms of their extractive capacity
* Comparison of licensing models, development methodologies, organisational tools and software tools across different types of projects (software, hardware, data, content)
* Exploration of different Open Government and Open Science policy models in relation to different forms of open projects
* Exploration of different aspects of socio-materiality in relation to open projects
- Dissemination of research results to the academic and scientific community, through the publications, including open access
- Contributing to the development of Studies of the Open as a discrete interdisciplinary field incorporating areas such as Computer Science, Management of Information Systems, Organisational Theory, Law, Philosophy, Sociology, Education, Policy Making and Data Science.
- Integration of relevant research with the work of existing groups such as those of the Free Software Society, Creative Commons, Open Government Partnership, European Open Science Cloud, OpenAIRE, as well as specific streams and conferences **Include ECIS, ICIS, IFIP, HICS, Open Related Research Groups and conferences**

1.2.2. Capacity-building Objectives

The Study of the Open is an interdisciplinary area of increasing relevance, which because of its character and nature needs to be advanced through collaboration and cooperation.
More specifically, this Action aims at:
- Supporting the knowledge exchange between computer scientists, developers, lawyers, policy makers, managers, organisation theory experts, sociologists, and media theorists.
- Enhancing knowledge exchange through Short Term Scientific Mission (STSM) that will allow the exchange of different epistemological and ontological approaches from relevant experts

- Engage in exchanges with the industry as well as the public sector in order to provide input both with regards to the improvement of development methodologies and organisational methods but also policy making activities
- Involving Early Career Investigators (ECI) and Inclusiveness Target Countries (ITC), connecting researchers from COST Countries, a Near-Neighbour Country Institutions, and International Partner Countries (IPC) which have worked on topics of interest for the Study of the Open.
• Pushing employment of young researchers by creating awareness of the potential of the trans-domain field arising from an interdisciplinary approach to the Study of the Open.

1.3. Progress beyond the state-of-the-art and Innovation Potential

1.3.1. Description of the state-of-the-art

While the Study of the Open has been a research area that has been intensively explored over the past twenty years, it still suffers from fragmentation and limited interaction between the different disciplines that approach the phenomenon of Open from their own perspective. Nevertheless, the key contributions in relation to the study of the open may be summarised as follows:

- Software Development, Information Systems and Management:

Early Studies of the Open have focused on specific types of open source software, their features and characteristics (Stallman, 2015). Such studies are of limited interest since they focus on specs, features, methods and algorithms related to Open Source software, but not the nature of the development process as an open process (Feller, 2007). The latter has been extensively explored within the context of the software development methodologies (Fitzgerald, 2006) as well as the organization and business studies context. Such studies have extensively explored the way in which FOSS affects methodological concerns, the organization of development, the tools and the business models developed around the practices of the open.

- Openness comprises software, hardware, content, and designs.

Open source software (OSS), the origins of which can be traced back to the 1950s, is software distributed with a license that allows access to its source code, free redistribution, the creation of derived works, and unrestricted use. OSS applications cover most areas of consumer and business software and their study touches many disciplines, including computer science, information systems, economics, psychology, and law. Behind a successful OSS project lies a community of actors, ranging from core developers to passive users, held together by a flexible governance structure and membership, leadership and contribution policies that align their interests. The motivation behind individuals participating in OSS projects can be, among others, social, ideological, hedonistic, or signaling, while companies gain from their access to high-quality, innovative projects and an increase in their reputation and visibility. Nowadays many business models rely on OSS as a product through the provision of associated services, or in coexistence with proprietary software, hardware, services, or licensing. The numerous OSS licenses mainly differ on how they treat derived software: some contain provisions that maintain its availability in open source form while others allow more flexibility. Through its widespread adoption, OSS is affecting the software industry, science, engineering, research, teaching, the developing countries, and the society at large through its ability to democratize technology and innovation (Androutsellis-Theotokis et al 2010).

- Organisation, Production Models, Labour and Incentives:

Researching organisational and production aspects of open projects has rather quickly moved from the study of software development to the study of all open projects. While software development studies would mostly focus on the question of how new software development methodologies were to be deployed in this context, a variety of new streams of research has approached the issue from multiple new points of view including transaction cost, communities and communities of practice, organisational theory, information theory and knowledge theory. All these perspectives provide different models for how work is organised, what kind of labour is produced, what are the relevant business models, how is knowledge produced and organised, what it means for communities of different kind and why individuals and companies take part to such activities without direct compensation (Lakhani and Wolf, 2005). The latter issue of incentives has been a fundamental concern throughout the trajectory of the evolution of Open projects and it has gradually moved from an open software, content and data question to a broader question of crowds and sharing economy.

- Copyright reform, licensing regimes, regulation theory, business models

Research related to the open is inevitably linked to Copyright, IPR and licensing issues. Early copyright theory investigates the way in which open licences operate and are construed (Rosen, 2005). Critical legal studies explore the boundaries of copyright and the implications of a different incentives model for

the way in which we approach the copyright system overall, including copyright limitations and exceptions, fair use and the public domain, the digital commons and copyright/ IPR reform (Boyle, 2003, Lessig, 2008). Other studies expand further to issues related to the more general problem of innovation regulation and the overall operation of open in the IPR and innovation system (Black et al., 2005; Chesbrough, 2003). Such studies explore all the spectrum of IPR and licensing models, including freemium, sharing and different variations of the open. They also relate to the exploration of different business models and what licensing schemes they entail or presuppose as well as specific collective licensing, cross-licensing, pool-licensing or other similar regimes.

- Open Government and Data:

The concept of Open Government predates concepts of Open Source and is mostly related with ideas of government and public administration, transparency and accountability. With the advent of different forms of Open, mostly Open Data, and the emergence of the Public Sector Information (PSI) policies in Europe, Open Government has been closely related to technological developments, particularly through the use of Information and Communication Technologies in order to support a deeper and more meaningful participation of the citizen. Global initiatives, such as the Open Government Partnership, have also played a key role in developing comprehensive open government policies, roadmaps and operational plans. The emphasis on the use of data in accordance to the principles of Open and FAIR (Findable, Accessible, Interoperable, and Reusable) data and services is now a key European Union policy and appears as core pillar of a development model that revolves around open data, open science and open innovation with the participation of the public sector, academia, the private sector and civil society (Etzkowitz and Leydesdorff, 1995).

- Open Science, Education and Culture:

Open Access appears as a movement in the late 1990s. Influenced by the success of Open Source Software, open access came to explore similar licensing models, development and dissemination techniques and organisational structures. However, the substantial differences in the institutional context (different market and hierarchical as well as legal and cultural systems) have led to a set of different priorities compared to open source software. Open Access has been closely linked to the need to link publicly funded research to open access to publications, initially, and data subsequently. In addition, in order to succeed in delivering an open access ecosystem, it was necessary to develop a wide range of services, infrastructures and protocols/ standards, that used a great deal of open source software. In this context, we gradually moved to the Open Science vision, while the entirety of the research life cycle takes place in accordance to principles of openness. The European Open Science Cloud is the latest EU initiative aiming at supporting the European Research Area as an area of unhindered and universal access.Similarly, open education has been a movement that provided an open model for the release of educational material. The degree of openness is to a great extent dependent upon the question of the platform as well as the institutional (e.g. public, private, market-based etc) context in which the material is offered. Accordingly, cultural resources have also been at the epicentre of intense discussion as to how they are or can be released with Europeana being the landmark European initiative for the release of such material.Research has focused on a wide variety of issue ranging from technical (including interoperability and standards) and organisational to institutional, legal (with great emphasis on licensing), business and policy aspects of the phenomenon.

- Socio-technical theories, Critical Media Theory, Software Studies, Internet and society Studies, Political Theory, the study of the Commons:

All the aforementioned aspects of the phenomenon of the Open have been examined in the broader context of the society and technology studies (STS) that include critical media, software and Internet Studies, as well as political theory and the broader study of the Commons as a major socio-political phenomenon (2006; Benkler, 2003; Bollier, 2008; Lessig, 2008). Such studies have predominantly focused on the nature of the media and technology ecosystem in which digital and hybrid digital-physical production take place (Hardt and Negri, 2009). In that sense we have a growing body of literature exploring sociomateriality, post-humanism and post-internet society as major socio-political trends that inevitably affect modes of production and dissemination of content (Braidotti, 2013; Haraway, 1990; Latour, 2005). This growing body of literature recognises the fundamental transformation of models not only of production and consumption but also of political organising and action, creative expression, communication, social reproduction and human to human or human-machine interaction (Bratton, 2016; Jenkins, 2006; Manovich, 2008). In such a context the key question becomes how open and the commons may offer an alternative to highly extractive and often oppressive forms of organising and living such as those that the sharing economy and platform capitalism models offer (Gawer, 2009; Srnicek, 2016)

1.3.2. Progress beyond the state-of-the-art

While the different research streams comprising the Study of the Open have seen a gradual but steady growth and diversification over the past two decades, the research area remains still fragmented in terms of the issues covered, the nature of expertise as well as the methodological approaches deployed by researchers. The Study of the Open Action aims at overcoming these issues by fostering collaboration in order to achieve progress in the following issues:

(a) Production Models and Organisational issues

The knowledge and experienced acquired with regards to the nature of organising open source development, in terms of software development methodologies, technology and services ecosystems and business as well as institutional environments, will be exchanged with similar experience from the areas of open government, open data (both in the private and public sector) and open hardware and standards. Such exchange of models will allow us to better understand how different types of projects (such as software vis-à-vis data or hardware) and contexts (such as government vis-à-vis private sector or academia) influence and are influenced by the development, dissemination and value production methodologies.

(b) open licensing across contexts and types of rights

The sophistication of licensing schemes has greatly increased in the course of open projects development and evolution. However, more frequently than not, it remains fragmented in specific domains (e.g. software vs. hardware vs. data) or fails to appreciate the differences in terms of the licensed content (e.g. government data vs. cultural or scientific data). Licences also need to be complemented by a variety of tools, both legal (e.g. contributor agreements, consortium agreements or MoUs, Terms of Service) and technical (e.g. meta-data, licence compatibility calculators, licence readers etc) in order to be more functional and derive more value for all users of licensed content. In addition, the expansion of the open model from copyright to designs and patents has also made apparent the need to research the types and operation of the equivalent licensing arrangements.

(c) business models and value production

This research will pay particular emphasis in the collection, identification and evaluation of different business models related to open projects. Again, the action's main contribution will be in comparing different types of projects, value and business models in order to provide conclusions as to how they differ and the extent to which they may be applied in a variety of contexts and situations. This is of particular importance in the European context, since most of the open business models have a North American context and fail to match the multifarious and multilevel nature of the European context.

(d) Policy making

Policies regarding open projects, particularly in the European context, remain by and large focused on sectoral issues and specific types of content. This research proposes a more holistic approach investigating how open could be a central pillar of developmental policy within the context of the triple helix. The action will coordinate inputs from policy makers, the private sector, academia and civil society in order to produce a comprehensive framework for developing, implementing and assessing policies of openness across the board of sectors and types of open projects.

(e) Infrastructures and tools

Infrastructures and tools supporting the life cycle of different open project exist in abundance. Nevertheless, its is common that these tools are addressed to specific communities both in terms of their design and licensing terms. The Study of the Open action aims at taking stock of the tools, providing a taxonomy of their origin, operation, cost and application and seek synergies for using them in a cross-contextual fashion, re-purposing them and investigating the degree to which they may be catalogued and further advanced by being used across user communities and sectors.

(f) The political economy and ethics of Open, the Commons and the Sharing Economy

Theoretical work on open suffers from three main problems: First, it keeps focusing on specific research areas rather than providing a comprehensive narrative for the whole field; second, it is often reductionist in the sense of viewing open or the commons as a single dimensional or pure phenomenon, whereas in fact open almost never exists in isolation to other forms of organisation (e.g. communities and corporates), licensing (e.g. dual licensing) or coordination mechanism (e.g. Commons Based Peer Production and Markets); third, it lacks a comprehensive theoretical framework on the reasons why advanced technological environments tend to give rise to forms of production and socio-economic interaction in general that could fall under the umbrella of open, the commons or the sharing economy. This action will seek to address all these problems and bring together theoretical work from the fields of information systems (Ciborra, 2000; Kallinikos, 2006; Orlikowski and Iacono, 2001), media theory (Fuchs and Fisher, 2015; Fuller and Goffey, 2012; Haraway, 2013; Lessig, 2004; Manovich, 2008) and critical political studies (Bratton, 2016; Galloway, 2006; Lovink, 2003) in order to provide a comprehensive theorisation of the phenomenon of open. It will also seek to explore the ethics we require in the context of an AI intensive and data driven environment, where open and sharing becomes the

default, the collaboration between human and machine is increasing and the licensing arrangements increasingly require machine assistance to be meaningfully processed.

1.3.3. Innovation in tackling the challenge

The main innovative elements of the Study of the Open may be summarized as follows:

(a) Interdisciplinary Approach

The fragmentation of the research landscape in the area of open requires a truly interdisciplinary approach where insights from different fields may contribute to a holistic understanding of the phenomenon of Open. Approaching Open Projects as part of a broader trend that, without essentialist reductions, has some fundamentally similar characteristics allows a better grasp of the phenomenon even in situated instances. In addition, the sharing of a common standards and technical framework will assist the emergence of new research approaches and will increase the quality of the findings.

(b) Methodological Openness

The interdisciplinary approach followed in the action results in a methodological openness as to how we approach the phenomenon of open. This will give us the opportunity to test the boundaries of qualitative and quantitative research, particularly when this is data-driven research. This methodological openness will be combined with a rigorous approach as it will have to be meticulously documented and tested by the various research communities.

In addition, all the results of the project from its commencement onwards, i.e. case studies, data, content, articles etc will be hosted on open platforms (e.g. OpenAIRE, GitHub etc), will use the Wikimedia platform as a dissemination tool (with the creation of wikibooks for overviews on specific research areas) and release all data, content and software produced following open FAIR principles.

(c) Focus on the regional and local with a global outlook

The approach to be followed is one giving particular emphasis on the local implications of the open source project, particularly in terms of their societal implications and developmental impact. Such impact-driven and location sensitive approach is in contrast to most of the studies that have a strong bias towards north American market models. This does not mean that this action does not appreciate the global dimension of openness; on the contrary, it is this blending between global and micro or local elements that constitutes the essence of open projects and will constitute one of the core innovative elements of our approach.

(d) Emphasis on socio-materiality and post-humanism

The action gives particular emphasis on two aspects of background research and theory which we consider as essential for a deeper understanding of the reasons behind open-related modes of organising, producing and living: First, we give great emphasis on an understanding of technology from and an assemblage (Delanda, 2006) and sociomateriality (Wanda J. Orlikowski and Susan V. Scott, 2008) perspective. Such an approach has the benefit of investigating key sociotechnical questions in relation to one of the most pervasive phenomena of contemporary technological societies; Second, we give emphasis on the interaction between humans and non-humans from a post-humanist perspective, giving particular emphasis on theories that allow us a deeper understanding of collective organising through technical as well as social means and an insight into the role that algorithms play in open, commons and sharing economy contexts.

(e) Looking beyond the boundaries of Open

One of the crucial innovations of this action is its focus on not merely on the operation of classic open projects but its constant juxtaposition with different variations of openness with particular emphasis on the commons as well as its comparison to sharing economy phenomena. This approach allows us to understand the boundaries of the socio-economic elements of open but also to understand the ways in which technologies, organisational forms and policies may be created and may contribute to a better common future.

1.4. Added value of networking

1.4.1. In relation to the Challenge

Networking is essential for succeeding in addressing the challenge both because of their complexity and the need of collective knowledge in addressing the problem, but also because of the need to create a substantial body of comparable case studies that could facilitate the replicability of results and the long term sustainability of the project. More specifically:

(a) By following a mixed model of a network of experts and an open source mode of organizing, producing and disseminating data, research methods, case studies, reports and papers we will manage to leverage both a wide range of experts and a broader and constantly growing research community. In

addition, we will manage to achieve the sustainability and scalability of the action beyond the life-span of the project.
(b) The network of experts from different EU Member States as well as third countries will provide a multitude of case studies representing different context and allowing to study both the situated action of open communities but also the greater trajectories of open technologies. It will also assist in understanding the role of open in the global south and its potential role in a sustainable and inclusive growth model.

1.4.2. In relation to existing efforts at European and/or international level

The Study of the Open is positioned within a broader set of efforts both in terms of research, practice and policy both at the European and the International level. There have been efforts to network different groups operating in the area of open without, however, achieving an exhaustive overview of the field or connecting different aspects of openness. More specifically:
- In the academic level there has been substantial work in terms of conferences and journals. Most of the Information Systems conferences have open source tracks (e.g. ECIS, ICIS, HICS, IFIP) while major journals have made special issues on openness (e.g. EJIS, IT and People, MISQ etc). Similar phenomena we have in law, economics, organization science and political theory. However, in all these cases there is a lack of a comprehensive effort and a connection of the different research streams. By mapping and collecting all relevant research we aim at addressing and resolving this issue.
- The policy making in this area remains by and large fragmented. For instance, at the EU level, while there are elements of an open policy across the Digital Single Market policies, these remain isolated both in terms of achieving more concrete connection and channeling funding in a coordinated fashion but also in articulating policies in a comprehensive fashion. Substantial progress has been achieved in the area of open data, content and software where there are policies in relation to Public Sector Bodies, open science and access, open education, open culture and open innovation. However, these policies do not see for instance data, content, source and hardware as part of single policy, neither are they linked to policies relate to collaborative, sharing or gig economy. This action aims at bringing all these pieces together and achieving a meaningful, comprehensive, inclusive and sustainable policy framework.
- Civil Society has also been quite successful both in terms of sector specific initiatives, such as the Free Software Foundation, the Open Source Initiative, Creative Commons or Open Knowledge. It has also achieved a certain degree of cross-pollination between different types of groups, especially between software and data. It has also maintained a powerful network of academics and local civil society organisations. However, it still lacks a holistic approach and a robust academic network that could focus specifically on research related to Open and allow the mobility of researchers, the frequent exchange of ideas and the support of their circulation across fields of open. This action aims to support existing Open activities by civil society organisations, through the linking of the participating academics with them in order to have the research driven by actual needs and at the same time providing meaningful input to the relevant communities.

2. IMPACT

2.1. Expected Impact

2.1.1. Short-term and long-term scientific, technological, and/or socioeconomic impacts

The Study of the Open action has substantial impact on a number of areas, in the academia, the private sector, the public sector and the civil society.
More specifically, the action follows a layer-wise methodology that creates a clear and sustainable body of knowledge regarding the study of open. The layer of experts across a variety of countries, EU Member States or others, provides input in terms of academic work and initiatives and connect with and to the relevant communities in their country. This second layer comprises of the following elements that illustrate the impact in scientific, technological and socio-economic terms:
- Scientific and Research Impact: this action establishes a more solid and coherent theoretical approach for project that are based on the principles of open, but also allows a better theoretical approach for related phenomena especially those in the context of the sharing economy. In addition, it allows the cross-fertilization of the literature in a way that it will avoid simplifications or the attribution of universal characteristics to specific and situated open projects and phenomena. This also includes methodologies that will become more robust and usable as a result of their cross-contextual use. Finally, researchers

from different countries and projects will have the opportunity to get connected and exchange knowledge from their colleagues and hence advance their study of the phenomenon of open.
- Technological Impact: we expect this research to lead to a far more sophisticated from the existing understanding, use and development of open tools. More specifically, the action will allow the use of technologies that are traditionally used in one type of content (e.g. source code) to another (e.g. content and data) in a greater and more systematic way compared to what is happening now. It will also allow the linking of companies that work in the area of open, especially those that achieve their financial sustainability through open business models. This transposition will allow the emergence of innovative technological solutions but also will prevent use from making the same mistakes in the treatment of communities and their productive capacity.
- Socio-economic impact: the continuous linking of the public sector and the civil society with this matrix of open related literature, researchers, technologies and companies will allow the transfer of technology and know-how that could substantially contribute to a European approach of development aiming at shifting the cost from licensing to human and social capital. It will also allow policy makers to devise strategies for tackling issues posed by the platform and sharing economy that go beyond the realms of classic competition and antitrust law and looks for more innovative and groundbreaking solutions aiming at an inclusive development model.

2.2. Measures to Maximise Impact

2.2.1. Plan for involving the most relevant stakeholders

The action of the Study of the Open will operate in three stages:
(a) Stage One: Academic Community involvement. At this stage, the academics and researchers in the network will suggest:
- key relevant researchers and thinkers in the area
- key research centres ,academic institutions and libraries, and projects
- key conferences or sessions of conferences This stage will also include dedicated workshops in the context of existing conferences with the explicit objective of introducing new concepts, methods and tools from different types of open projects, such conferences tend not to be involved with. Study visits and short residencies will also be organized.
(b) Stage Two: Civil Society Involvement
- mapping and engagement with local chapters of key civil society organisations
- organizing of meetings with key civil society groups with other groups, especially academia and the public sector.
- initiating open calls for research and case studies/ data collection in accordance to the needs and priorities of civil society organisations
(c) Stage Three: Private Sector
- mapping the existing open business ecosystem (both at the stage of start-ups and scaling-up)
- organizing meet-ups with private sector players (companies and professional associations) along with academics and the public sector
- organizing visits in model open companies and obtaining input for relevant to the public sector research
- organizing seminars for the public sector
- collaborating with European entrepreneurship platforms like Enterprise Europe Network
(d) Stage Four: Public Sector
- organizing meetings with all the respective national IP bodies and the key international ones (WIPO, EUIPO, EPO)
- organizing meet-ups with all the competent ministries per country and all the competent DGs at the European level to receive input for relevant research and provide expertise
- organize cross-sectoral meet-ups
All meetings will be both on and off-line and the dissemination of material will be facilitated through the project's online open knowledge hub (see dissemination).

2.2.2. Dissemination and/or Exploitation Plan

The dissemination plan of the Study of the Open action is closely related to its methodology, the engagement of the stakeholder and the challenges it seeks to address. The action will deploy the following dissemination means:

(a) Use of open platforms for the collection of bibliographic material (Zotero and wikis), for the sharing of code (github), sharing of publications (OpenAIRE, Zenodo), and the creation of how to guides or consultation documents (use of Wikimedia platform tools). Such an approach will

ensure that the project remains open-ended and that all relevant communities have access to the material and are able to re-use and enrich it.

(b) Social media (e.g. Twitter, Facebook), especially in relation to influencers in specific communities (e.g. FOSS, sharing economy, business, open data)
(c) Dissemination through special interest portals and sites, such as Creative Commons, FSF, EOSC, OpenData portals etc or through the dissemination platforms of the key stakeholders (e.g. Academica, Public Sector, Civil Society).
(d) Meet-ups of different kinds of stakeholders and influencers with the aim of cross-pollination of different ideas
(e) Open innovation events and hackathons on specific challenges related to aspects of open (e.g. hack the law events, anti-conferences, etc)
(f) Participation in conferences by major EU projects in the area of open (e.g. ISA2, EOSC, OpenAIRE, Europeana)
(g) Participation in public consultations in relation to issues of openness
(h) Working Group Meetings
(i) Action Workshop for all network members
(j) Final Action Event
(k) Knowledge exchange through Short Term Scientific Mission (STSM) that will allow the exchange of different epistemological and ontological approaches from relevant experts

Action	Contributors	Length	Frequency
(a)	Members of all WGs + other relevant communities	Duration of the Action and afterwards	At least monthly for each WG
(b)	Members of all WGs	Duration of the project	Weekly
(c)	Members of all WGs	Duration of the project	At least quarterly
(d)	Members of all WGs + other relevant stakeholders	Duration of the project	At least 1 per year for each WG
(e)	Members of all WGs according to area of expertise	Duration of the project	Yearly
(f)	Members of all WGs according to area of expertise	Duration of the project	2-3 participations yearly
(g)	Members of all WGs according to area of expertise	Duration of the project	1-2 consultations yearly
(h)	For each WG	1-2 days	Twice a year
(i)	All members of the action	1-2 days	Yearly
(j)	All members of the action + relevant stakeholders (academic, civil society, private and public sector)	3 days event	Once near the end of the project
(k)	All members of the action especially PhDs and ECI	1-6 weeks	4-6 per year, every year

2.3. Potential for Innovation versus Risk Level

2.3.1. Potential for scientific, technological and/or socioeconomic innovation breakthroughs

The Study of the Open is an action with high innovation potential and mid to low risk in its implementation. The innovation appears in three levels:

(a) Technological innovation (mid level): the technological innovation is mostly through the combination of existing and standard technological components in order to achieve functional solutions. Examples include the innovative use of repositories and wikis, particularly for the documentation of different forms of openness, the organisation of hackathons posing specific

challenges to the participants that will have derived from the consultation with the relevant communities and stakeholders and finally the innovative use of legal tools in order to achieve different forms of openness.

(b) Scientific and research innovation (high level): this is the strongest part of the innovation potential of the proposal since it calls for the application of methodologies applied to the study of one form of open project across contexts and types of material. This approach ensures both methodological and theoretical innovation. This effect is further amplified by the use of innovative theoretical frameworks (such as sociomateriality and post-humanist theories) that will challenge both the existing approaches of what open is and also explore its boundaries in relation to other phenomena such as the sharing and collaborative economy.

(c) Socio-economic and policy innovation (high level): the better understanding of the different textures of openness will have to be expressed in terms of specific production and organisation models as well as business models that support openness. Sharing economy models will also be explored both in terms of their effect in human - non-human constellations and the overall effect they have in society, economy and culture. These insights, since they are going to be constantly available and open and they will be disseminated through a series of public events with all major stakeholders, they are expected to have a substantial socio-economic and policy impact.

The main risks of the action are as follows:

- Methodology compatibility: The methodologies used in different areas of research (e.f. Free Open Source Software methodologies vis-a-vis Open Science research or political science) share common elements, but have significant differences in terms of the empirical focus, the unit of analysis and the tools of analysis. Unless there is substantial work in terms of normalising methodological tools there may be serious mistakes both in research analysis and results.
- Theoretical complexity: The phenomenon of Openness is multifaceted and volatile. In addition, elements of its organising form and philosophy spreads in areas beyond what is technically “open”. As a result, the theoretical constructs explaining the phenomenon tend to be complex and come from different intellectual traditions. Their combination and the production of new theories needs to be handled with care and respect to their original ontological and epistemological assumptions.
- Willingness of relevant stakeholder to collaborate: Stakeholders are diverse and often with competing interests or priorities. Their mobilisation and organisation of meetups may be proven a demanding challenge.
- Volatile Private Sector: The private sector that deals with open and related phenomena, particularly the sharing economy is both very volatile, as high innovation field, and in some case very difficult to have access to. This is particularly true in the case of the sharing economy businesses. This situation is expected to lead to significant issues of access and conducting of empirical studies.
- Fragmentation of the Sector: The biggest challenge and risk is managing the study of an extremely fragmented and multifaceted sector. Good organisation and coordination is required in order to manage the collection of the relevant empirical material .

The risks from the action are limited for the following reasons:

(a) Open research approaches will ensure constant peer review and assessment of results by the top experts in the field globally

(b) Regular meetings with all stakeholders and a constant process of exploration of all possible entities involved, including non-humans, will give voice even to the silent actors and constantly validate the results of the action

(c) The iterative and incremental approach followed will allow the project to control any scaling beyond control and will allow constant corrections by its steering committee.

3. IMPLEMENTATION

3.1. Description of the Work Plan

3.1.1. Description of Working Groups

Working Group 1 Methodology and Data Collection
Objectives

This WG will look overall into the methodologies of investigating, producing and disseminating open projects and suggest innovative new models for empirical analysis. It will also create a set of of open resources to be used by all the relevant communities.

Tasks

1. Identify activity areas with common methodologies
2. Map the methodological environment
3. Identify groups of stakeholders using common methodological tools
4. Organise cross-stakeholder, inter-thematic and inter-disciplinary methodology groups
5. Create model methodologies
6. Introduce open methodological resources

Milestones

1. Initiation of mapping process
2. Completion of group forming
3. Completion of resource and Study of the Open platform formation
4. Releasing Working papers on Methodologies of Open
5. Publication on Methodologies of Open

Deliverables

1. Map of methodologies
2. Open Methodology Platform and Data Sets
3. Publications on Methodologies of Open

Working Group 2 Production models and Organisational issues

Objectives

This WG focuses on one of the most prevailing and horizontal issue in the context of the Study of the Open, that is the identification of the core production and organisational models. Our starting point is transaction cost theory and the Commons Based Peer Production (CBPP) model but other forms of analysing production and organisational models, with particular emphasis on the work on knowledge organising and communities of practices will be used.

Tasks

1. Map models of organising and production
2. Establish of Open Platform for models of organising and production
3. Comparison with forms of organising from the areas of sharing and collaborative economy
4. Establish cross-contextual working groups
5. Publishing of Models taxonomy and analysis
6. Propose innovative models for open production models and organisational issues

Milestones

1. Completion of mapping
2. Completion of Open Platform
3. Establishment of Working groups
4. Completion of Model creation
5. Public event and visit ***Deliverables***

1. Map of production and organisation models
2. Open Production Models Platform and Data Sets
3. Study of the Open for production and organisation models
4. Report on public events and meet-ups

Working Group 3 Open licensing across contexts and types of rights

Objectives

Licensing schemes (aka licences and related legal documents, ToS, MoUs, Licence Pools, Consortia Agreements, Funding Agreement, Legal Entities etc) are in the crux of any open or sharing economy project. In that sense, it is essential that we have a comprehensive study of the licensing ecologies developed around open and related projects and explore how the same value model may be served under different licences and the same licences may serve different value models. Collaboration with highly active global licensing communities such as Creative Commons and FSF is crucial for the success of the project. It is also very important that licensing compatibility charts and tools are created and different forms of Public Domain, Fair Use/Dealing/ Exception and Open licensing calculators that have already been created are deployed in the Study of the Open action.WG3 will closely collaborate with WG4.

Tasks

1. Mapping of different licensing schemes and technologies and publications related to them in different jurisdictions
2. Establish Open Platform for open licensing schemes

3. Establish cross-sectional workgroups and meet-ups
4. Create decision trees for open licensing and public domain calculators
5. Create open (licensing, public domain, fair use) calculators
6. Share and distribute open (licensing, public domain, fair use) data-sets
7. Create licensing compendia and free text books in key jurisdictions
8. Publish comprehensive licensing models wiki-handbook

Milestones

1. Completion of mapping
2. Completion of Open Platform
3. Establishment of Working groups
4. Completion of Model creation
5. Completion of Publications
6. Public event and visit

Deliverables

1. Map of production and organisation models
2. Open licensing Models Platform and Data Sets
3. Open online calculators
4. Open Licensing Compendium
5. Open Licensing Wiki-handbook

Working Group 4 Business models and value production

Objectives

Open Business models are increasingly becoming mainstream, while -however- they are in dangerous proximity to sharing economy models. Objective of this working group is to create maps of different types of value production (monetary and non-monetary) and then analyse the relevant business models in different sectors, with regards to different open projects and in relation to sharing economy models.

Tasks

1. Map and understand value and Open Business model across the board of open projects and sectors
2. Develop an Open common platform for sharing and improving open business models
3. Compare Open and Sharing economy models, particularly in relation to the types of value and its distribution among participants
4. Establish interdisciplinary and cross sectoral open business models working groups
5. Develop sustainable Open Business models

Milestones

1. Establishment of Open Business Platform
2. Complete mapping of value and business models across open projects
3. Complete publications on model value and business models
4. Organise public debate on the issue of value, business and openness

Deliverables

1. Map of value and business models in open projects
2. Open Value and business Platform and Data Sets
3. Open Value and business meet-ups report
4. Open Value and business publications

Working Group 5 Policy making

Objectives

Policy making in relation to open projects is rather fragmented in terms of area (science, culture, public sector), project type (data, content, code, hardware) and region (e.g. global south etc). Objective of this action is to bring these aspects together and understand the policy tools available (e.g. laws, self-commitments, funding, rating, business and career path, financing etc). In addition, this WG5 will also present model policies on the basis of existing successful models but also critically try to assess policies both in relation to the political economy of open and the tools available.

Tasks

1. Identify key policy areas and policies in different areas of open, platforms, commons, collaborative economy, sharing economy in the EU and other areas
2. Map policies in global level
3. Explore the interaction between different types of policies (e.g. Public Sector Information, Open Science, Open Government, Open Culture etc)
4. Engage relevant stakeholders (e.g. public and private sector (sectoral and professional unions and chambers), civil society, academia)
5. Create an Open Policy Platform to openly document these policies

6. Publish a wiki-book on policies starting with the jurisdictions of the members of the action

Milestones

1. Open Policy Platform creation
2. Mapping of policies complete
3. Public events and meet-ups complete
4. Open Policies Wiki-book complete

Deliverables

1. Open Policy Platform
2. Map of Open Policies
3. Report on events and meet-ups
4. Open Policies wiki-book

Working Group 6 Infrastructures and tools

Objectives

Appreciating the existing infrastructure and tools for all types of open projects is crucial for creating an ecology that may be re-used across the spectrum of open but also for appreciating their regulatory capacity over the projects they help organise and produce. Substantial public funding and private activity has been invested in these tools, however, no comprehensive understanding of their nature, limitation and effect has been achieved, leading to a poorer understanding of the phenomenon of open. Objective of WG6 is to compensate for this gap and make substantial contribution in the mapping, understanding and reuse of infrastructures and tools for openness.

Tasks

1. Developing Open Tools and Infrastructures platform
2. Mapping open infrastructures and open tools
3. Organise meetups with different tool developers and users
4. Create an Open Tools and infrastructures wikibook

Milestones

1. Open Tools Platform creation
2. Mapping of tools and infrastructures complete
3. Public events and meet-ups complete
4. Open tools and infrastructures Wiki-book complete

Deliverables

1. Open tools and infrastructure Platform
2. Map of tools and infrastructure Policies
3. Report on events and meet-ups
4. Open tools and infrastructure wiki-book

Working Group 7 The Political Economy and Ethics of Open, the Commons and the Sharing Economy

Objectives

This WG explores the deeper foundations of the Open and compares it with sharing and collaborative economy constellations. WG7 explores the political economy of openness particularly in relation to its capacity to create an ecology of the commons, but also in relation and as a response to the extractive capacity of the sharing economy. In addition, this WG will explore the ethics of Openness and sharing economy particularly in the context of AI ethics and human/ non-human assemblages. Objective of the WG is to flesh out the socio-economic, philosophical and diverse ideological foundations of openness and explore the capacity it has to contribute to our commons sustainable well being.

Tasks

1. Identification of elements of theories of socio-materiality and posthumanism relevant to the mechanics of openness, particularly as presented in WGs 2, 3 and 4.
2. Theorization of openness in the context of sociomateriality and posthumanist theories
3. Establishment of an ethics of AI and data framework in relation to different forms of openness and the sharing economy

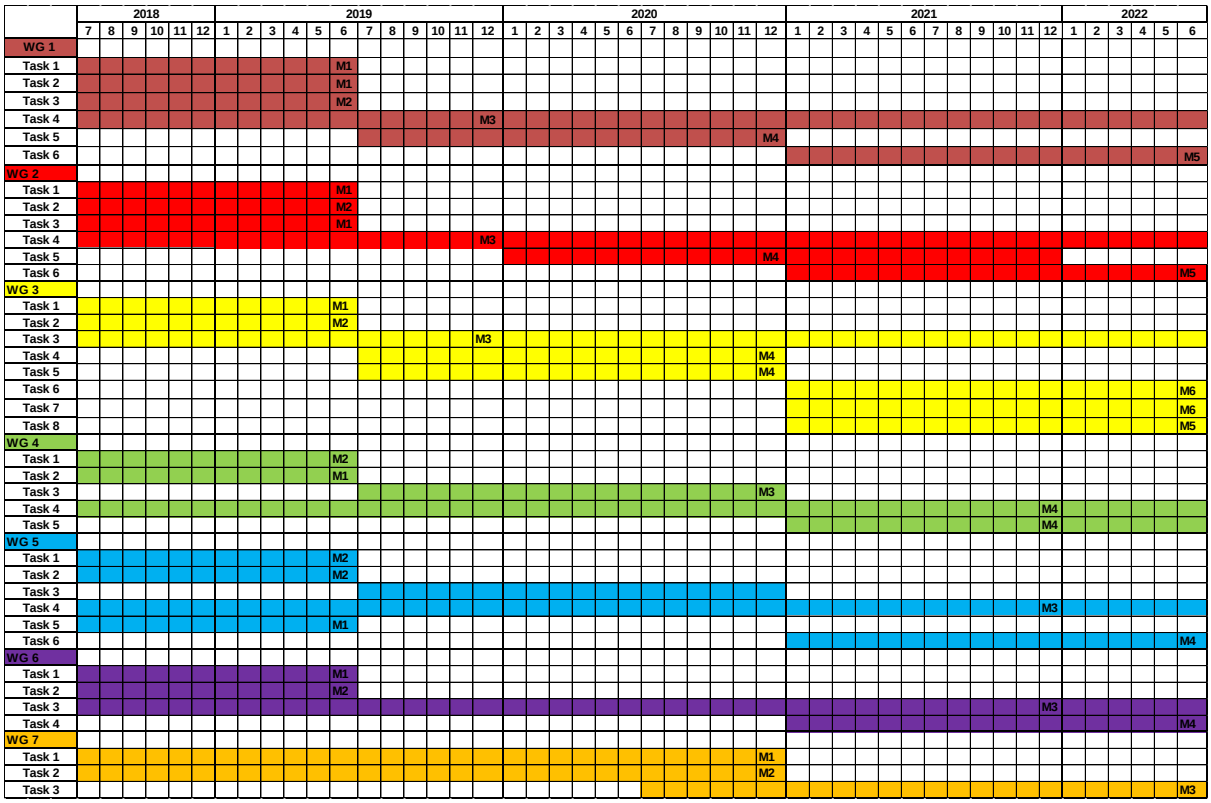
Milestones

1. Completion of sociomateriality and post-humanism literature review
2. Compilation of a sociomateriality/ post-humanist theory for openness and the sharing economy
3. Compilation of a framework of ethics for openness and the sharing economy

Deliverables

1. Sociomateriality, post-humanism and openness literature review
2. Publication on Sociomateriality, post-humanism and openness
3. Code of Ethics for openness

3.1.2. GANTT Diagram



3.1.3. PERT Chart (optional)

3.1.4. Risk and Contingency Plans

The following Table outlines an indicative list of main risks, their impact on the Action and some proposed solutions and mitigation strategy:

Problem/Risk	Risk exposure	Impact	Proposed risk-mitigation measures
Methodology compatibility: Different focus on analysis, models and tools in all areas of research relevant to this Action	Medium	Unless there is substantial work in terms of normalising methodological tools there may be serious mistakes both in research analysis and results.	Open research approaches will ensure constant peer review and monitoring of progress of results by the top experts in the field globally
Theoretical complexity: The theoretical constructs explaining the phenomenon of openness tends to be complex and come from different intellectual traditions	Medium	The production of new theories deriving from different intellectual traditions and theories needs to be handled with care and respect, otherwise the Action may not succeed in terms of producing valid scientific assumptions and results	The iterative and incremental approach followed will allow the project to control any scaling beyond control and will allow constant corrections by its participant members
Willingness of relevant stakeholder to collaborate	Low	Lack of mobilisation of relevant communities and stakeholders would sufficient impact the visibility of the research and the coordination of research activities	The participant partners of the network have massive experience and knowledge in their field of expertise. Moreover they all have strong affiliations and can leverage on an extensive network of relevant stakeholders.

Volatile Private Sector: The private sector that deals with open and related phenomena, particularly the sharing economy is both very volatile, as high innovation field, and in some case very difficult to have access to.	High	This is expected to have a significant impact on access and conducting of empirical studies	The plan is to have regular meetings with all stakeholders and a constant process of exploration of all possible entities involved. By involving the stakeholders in the process from an early stage in the Action we ensure that they feel empowered, are engaged and feel ownership in the studies that will be conducted.
Fragmentation of the Sector: The action deals with an extremely fragmented and multifaceted sector	High	Not being able to collect and manage all the relevant material.	The Network will provide a management mechanism that ensure that all members participating will have good organisation and communication amongst them and also with relevant stakeholders. If required more Action Workshops or Working Group Meetings will be scheduled.

3.2. Management structures and procedures

The Action Management Committee (Action MC) will consist of up to two representatives of each COST Member having accepted the MoU. The Action MC will be in in charge of the coordination, implementation, and management of the Action's activities as well as supervising the appropriate allocation and use of the COST funding with a view to achieving the Action's scientific activities. The Action MC will elect its Action Chair and Vicechair, who will be responsible for the coordination and implementation of the Action according to COST Policy and Rules. The Action MC will be obliged to reserve one of the key leadership positions in the Action management (e.g.Action Chair, Action Vice-Chair,one of the WG Leaders, Grant Holder) to a representative of a ITC county. The Grant Holder will be the legal entity responsible for the administrative and financial implementation of the COST Action, and it will be represented by four key positions: Grant Manager, Scientific Representative, Legal Representative and Financial Representative.

The scientific activities of the Action will be carried out in 6 Working Groups (WG), as given in Section 3.1.1, led by Working Group Leaders and Vice Leaders, who will be appointed by the Action MC. They will participate in the Action MC meetings to report on progress of their WGs. Each WG will meet twice a year and, at other times, will use teleconferencing to discuss work and the affairs of their WGs.

The Action will support Short-Term Scientific Missions (STSMs), intended for PhD students and ECI to visit Action members. STSMs will also be included for more experienced researchers to share competencies and maximise collaboration. The evaluation of STSM applications and selection of grantees will be performed by the Action MC. The Action MC may formally delegate the evaluation of STSM applications to an STSM Coordinator or Committee. There will be annual Action Workshops open to all Action members and widely advertised to interested people through lists and networks. The Annual Workshop will feature invited speakers from scientific and industrial institutions. The Action will also launch a website to share information across the MCs and the WGs and disseminate results; it will be updated under responsibility of the Grant Holder.

3.3. Network as a whole

This Action presents challenges that span cross-disciplinary areas of research: theory, modelling, law, business, government, media, socio -economic etc. Nest-Open has been designed to cover all these areas and thereby maximise the expected result of the Action. The network of the Action includes expertise in all the different areas and also offers a good balance between experienced and young researchers, including several partners from developing countries. To maximise geographical (and thereby conceptual) relevance of the topics and methodologies considered, the Action includes also an International Partner (India) as well as a Near-Neighbour Country Institution Partner (Tunisia). The impact of the Action will be increased by involving relevant stakeholders (academic community, civil society, public and private sector), with whom the partners of our network have affiliations and long-term relations. Finally, Nest-Open, once started, will enlarge its network by involving PhD students affiliated to the participants' institutions, as well as representatives from other Cost Countries or IPC which can profitably improve Nest-Open's research activities and the relevant communities around it.