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Executive Summary

This document should be read in conjunction with the CloudLightning Dissemination Plan and the CloudLightning Exploitation Plan.

This document is an Initial Concertation Plan and is deliverable D8.3.1 of the CloudLightning project, a Research and Innovation Action project supported by the European Union Horizon 2020 programme under Grant Agreement Number 643946. Full information on this project, including the contents of this deliverable, is available online at (<http://www.cloudlightning.eu>).

Concertation actions are performed in the context of many research projects, as various benefits are foreseen for the collaborating parts. This collaboration leads to raising awareness on common areas of interest between the collaborators, exchange of best practices, removal of barriers to future collaboration on other projects, and a valuable dissemination tool for the project. The current Deliverable aims to identify and map an initial network of key stakeholders and potential collaborators related to the CloudLightning research areas. The concertation actions that have been realised from the whole CloudLightning Consortium are reported in the Deliverable, accompanied by the plan for future concertation actions to be held throughout the duration of the project.

This document provides the initial strategy and activities for successful concertation. It is organised as follows. Section 1 introduces the CloudLightning project, its aims and objectives for concertation and summarises the CloudLightning stakeholders based on the Dissemination Plan. Section 2 outlines the CloudLightning concertation strategy. This is followed by an overview of completed and future concertation activities. Section 4 presents our External Advisory Board. The document concludes with the performance indicators for the concertation strategy followed by a brief conclusion.

The concertation plan and activities outlined in this document are by no means final. They are all subject to change as the project develops and the project members engage with identified stakeholders through the External Advisory Board, primary research, and dissemination and exploitation activities. Any proposed changes are subject to approval by the Project Coordinator.

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1 Introduction

1.1 Purpose of This Document

This deliverable is part of Work Package 8, Task 8.3 – Concertation Plan. It will define the concertation actions that CloudLightning will carry out.

The plan will ensure that the project's activities are well orchestrated with similar initiatives worldwide and will encompass specific activities in connection with other EU projects.

Concertation with project stakeholders will be aimed to offer a self-organising and self-managing approach to the challenges facing the European cloud computing and high performance computing industries and to attract stakeholder communities and involve them in CloudLightning activities. Cloud service providers and industry consortia representing such providers will be specifically targeted to ensure the widest impact for the project results.

This Concertation Plan will be updated regularly to reflect the progress of CloudLightning and the wider context in which it operates.

This document is concerned with:

- Identification of concertation aims and priorities to help focus the efforts of the consortium as a whole.
- Identification and definition of target audience in line with the project dissemination plan including decision makers and influencers in key stakeholder organisations with a specific emphasis on the project's initial application domains - genomics, oil and gas exploration and ray tracing (3D image rendering).
- Identification of potential collaborators in the form of EU projects and initiatives and the expected benefits and outcomes from such collaboration.
- Identification of events for participation to further CloudLightning's concertation agenda.

1.2 Background

CloudLightning is funded under the European Union's Horizon 2020 research and innovation programme under the call H2020-ICT-2014-1. It comprises of eight partners from academia and industry and is coordinated by University College Cork.

Table 1 CloudLightning Partner Institutions

Partner Institution	Country
University College Cork (Coordinator)	Ireland
Norwegian University of Science and Technology	Norway
Institute e-Austria Timisoara	Romania
Dublin City University	Ireland
Centre for Research and Technology Hellas	Greece
Maxeler Technologies Limited	UK
Intel	Ireland
Democritus University Of Thrace	Greece

The objective of the project is to create a new way of provisioning heterogeneous cloud resources to deliver cloud services on the principles of self-management and self-organisation. This new self-organising system will make the cloud more accessible to cloud consumers and provide cloud service providers with power-efficient, scalable management of their cloud infrastructures.

The CloudLightning solution will be demonstrated in three application domains:

- I. Genome Processing
- II. Oil and Gas exploration
- III. Ray Tracing (3D image rendering)

Expected impacts for European cloud service providers that adopt the CloudLightning delivery model include:

- increased competitiveness through reduced cost and differentiation;
- increase energy efficiency and reduced environmental impact;
- improved service delivery;
- greater accessibility to cloud computing for high performance computing workloads

1.3 Stakeholders

Table 2 below outlines our preliminary analysis of stakeholders for dissemination and concertation. It includes the major categories of groups or individuals who can affect or can be affected by the achievement of the objectives for CloudLightning.

Table 2 CloudLightning Preliminary Stakeholders

Stakeholder	Description
End Users	An End User is the person for whom a hardware or software product is designed and marketed to. In the context of CloudLightning use cases, they are typically using software to complete a task or job that is compute intensive and/or data intensive. These may be academic researchers, reservoir engineers (oil and gas), wranglers and animators (animation) and genome analysts (genomic processing).
End User Organisations	End User Organisations are organisations that employ or provide or enable access to software or infrastructure for End Users. In the context of CloudLightning, these include higher education institutions, national computing centres and other firms that use compute intensive software e.g. animation and visual effects studios, genome processing companies, oil and gas companies etc.
Technology Channel Partners	A Technology Channel Partner is a third party organisation within a distribution channel that provides services or sells technology (including software, hardware and data communications) in concert with another entity in the IT channel, typically an ISV, Hardware Manufacturer, Telecommunications Service Providers or their agents.
Systems Integrator	A Systems Integrator is a person or organisation that specialises in bringing together component subsystems into a whole and ensuring that those subsystems function together.
Application Developer	An Application Developer creates software aimed at helping End Users complete a task or job. They may be employed by ISVs, CSPs, TSPs/NSPs, Systems Integrators, Technology Channel Partners, Hardware Manufacturers, and End User Organisations. Similarly, they may be End Users.
Independent Software Vendors	An Independent Software vendor (ISV) is an organisation specializing in creating or selling software.
Cloud Service Providers	A Cloud Service Provider (CSP) is an organization that offers some component of cloud computing – typically Infrastructure as a Service (IaaS), Software as a Service (SaaS) or Platform as a Service (PaaS) – to other organisations or individuals.
Telecommunications and Network Service Providers	A Telecommunications Service Provider (TSP) provides telecommunications services such as data communications access to support cloud services. In the CloudLightning context, high-speed networks may be offered by specialist Network Service Providers (NSP) at an international and national level e.g. GEANT (EU) and HEANet (Ireland).
Hardware Manufacturer	An IT hardware manufacturer is a firm that manufactures the physical parts or components of a computer such as processors, servers and other

	physical resources that may be used as the fabric of both cloud services and in the context of CloudLightning HPC platforms.
Standardisation Organisations	A Standardisation Organisation develops, coordinates, issues and maintains standards intended to address the needs of a group of adopters. Standardisation Organisations are consensus-building bodies comprising individuals and organisations. They can be categorised by their role, position, and the extent of their influence on the local, national, regional, and global standardisation arena.
Media and Industry Analysts	The media includes formal and informal communication outlets that create content to influence stakeholders. These include the broader general media outlets (e.g. national newspapers) and specific technical or scientific outlets (e.g. InsideHPC). Similarly, An Industry Analyst performs primary and secondary market research within an industry such as information technology, oil and gas and health sciences.
Policy Making Organisations	These are persons or organisations that formulate or influence policy in national government and include regulators, international bodies, trade associations and other political bodies.
Project Consortia	These are consortia formed to achieve a common goal related to the CloudLightning domains. They include EU and international projects.
Scholarly Authors	These are authors of scholarly works published in academic conferences, academic journals and other related outlets. CloudLightning is of interest to multiple academic disciplines including Computer Science, MIS as well as the specific use cases were a targeting. They may not be End Users.
Funding Bodies	Funding bodies are organisations that provide funding for industrial or academic research. They may operate at a national or international level and include philanthropic, private sector and public sector organisations.
Investors and Licensors	These are individuals or organisations that invest or license technology and other research outputs for commercial purposes.

1.4 Concertation Vision

The concertation plan focusses on engagement and collaboration primarily with Project Consortia, Standardisation Organisations, Policy Making Organisations and Funding Bodies. Other stakeholders will be targeted however their primary engagement may be through the main dissemination activities and/or exploitation activities e.g. investors and licensors. The success of the project relies on effective collaboration with industry stakeholders and with

other EU projects. The concertation plan will establish that CloudLightning's activities are well orchestrated with similar initiatives worldwide and will encompass specific activities in connection with the European Cloud Partnership, EU projects and EU standards bodies.

These activities will include both formal and informal engagement. Formal engagement includes participation in workshops, conferences, and collaboration on cloud and related standards, production of white papers, position papers and other projects. Information engagement will include informal discussions and engagement.

CloudLightning will draw on the experience of previously funded projects and envisages exchanges of knowledge with:

- current FP7 projects;
- current Horizon 2020 projects;
- projects funded by other agencies;
- projects funded by industry; and,
- any project deemed by the project consortium to be of potential interest.

1.5 Aims and Priorities

The overall aims and priorities of CloudLightning's concertation plan are:

- To establish synergies with relevant EU projects that relate to CloudLightning's core use case application domains.
- To collaborate successfully with other EU projects.
- To engage with international standardisation organisations with a view to contributing to the furtherance of standards.
- To collaborate successfully with the wider stakeholder community.

2 Concertation Strategy

The concertation strategy will include participation in workshops, conferences, collaboration on standards, white papers and other projects as well as informal interaction. Cloud service providers and industry consortia representing such providers will be specifically targeted to ensure the widest impact for the project results.

CloudLightning will engage in both formal and informal Concertation activities as described in the Section 4.

2.1 EU Project Concertation

CloudLightning will draw on the experience of previously funded projects and envisages exchanges of knowledge with current FP7 and Horizon 2020 projects and projects being funded by other agencies and by industry of potential interest to the proposed research. CloudLightning partners participate in a number of related projects providing a natural transfer of knowledge (See Table 3).

Table 3 Related EU-funded Projects with CloudLightning Partners

Project	Overview
CACTOS	CACTOS addresses the specific problems data centre operators face due to the exploding heterogeneity of the underlying hardware through - CactoScale: A set of tools and methods to acquire and analyse application behaviour and infrastructure performance data. CactoOpt: Mathematical models and their realisation to determine the best fitting resources within a provider context. CactoSim: A prediction and simulation environment for diverse application workloads. DCU is a partner in CACTOS.
MODAClouds	The open-source self-adaptation platform of MODAClouds under development that is based on performance monitoring is of high interest for CloudLightning. IeAT is a partner in MODAClouds and will ensure the take-up and avoidance of work redundancy.
SPECS	The open-source security-SLA management system under development is based on monitoring services which are looking forward beyond the current state-of-the-art performance monitors (monitoring data integrity, access history etc). These monitoring services are developed by IeAT as partner in SPECS and if appropriate will be reused in CloudLightning.
mOSAIC	The API that was designed was designed for component-based event-driven applications. The experiences in designing the interfaces will be feed in CloudLightning as IeAT was the scientific coordinator of mOSAIC. The take-up problems due to the API complexity will be avoided. Moreover, the deployment mechanisms and the drivers build for multiple Cloud services can be re-used.
HARNESS	HARNESS integrates heterogeneous hardware and network technologies into data centre platforms, vastly increasing performance, reducing energy consumption, and lowering cost profiles for important and high-value cloud applications such as real-time business analytics and the geosciences. Maxeler is a partner in HARNESS.

This year, following on from the Net Futures 2015 event in March 2015, DG Connect's Unit E2 are coordinating the clustering of projects that were represented at the event.

This has resulted in the Clusters of European Projects on Cloud initiative documented here: <https://eucloudclusters.wordpress.com/>

The purpose of this initiative is to:

create an environment where projects funded by the European Community (in particular, the recipients of ICT7 and H2020 grants) can interact and find synergies among them.

There are four clusters:

- Software Engineering for Services and Applications
- Inter-cloud Challenges, Expectations and Issues
- New Approaches for Infrastructure Services
- Data Protection, Security and Privacy in the Cloud

The high level goals and objectives for each cluster include technical and scientific collaboration. CloudLightning is participating in two clusters, namely (i) Inter-cloud Challenges, Expectations and Issues and (ii) New Approaches for Infrastructure Services.

2.1.1 Inter-cloud Challenges, Expectations and Issues Cluster

The cluster aims to address the large potential of multi-cloud and inter-cloud approaches. It brings together researchers and technology transfer and industrial experts to facilitate knowledge sharing and to encourage the exchange of approaches and collaboration on research.

The EU projects comprising this cluster are contained in Table 4 below.

Table 4 Projects comprising the Inter-cloud Challenges, Expectations and Issues cluster

Inter-cloud Challenges, Expectations and Issues	Call Type
CloudSocket	H2020 Call 1
BEACON	H2020 Call 1
SSICLOPS	H2020 Call 1
ENTICE	H2020 Call 1
CYCLONE	H2020 Call 1
AppHub	H2020 Call 1
SWITCH	H2020 Call 1
ASCETiC	FP7 Call 10, 8 and previous
ModaClouds	FP7 Call 10, 8 and previous
PaaSage	FP7 Call 10, 8 and previous
SeaClouds	FP7 Call 10, 8 and previous
mOSAIC	FP7 Call 10, 8 and previous

Table 5 provides a breakdown of the activity of the Inter-cloud Challenges, Expectations and Issues cluster from April 2015 to December 2015. This has resulted in an initial position paper.

Table 5 Cluster Activities 2015

Date	Milestone
April	Identify the projects that will contribute to this cluster (on-going)
May	Topics definition and prioritisation, work plan and cluster follow-up activities and deliverables
June	Kick-off teleconference to be hold with interested projects end of June
July	Telco
September	Telco Finalise position paper
October	Workshop and Discussion Groups at ICT-2015
December	Deliverable: Inter-cloud Challenges, Expectations and Issues Cluster Position Paper. Milestone: Initial research roadmap and project's classification

2.1.2 New Approaches for Infrastructure Services

The aim of the New Approaches for Infrastructure Services cluster is to create a forum to discuss innovation challenges and current research on infrastructure services. The current trends include the improvement of the virtualisation technologies, overcoming portability and interoperability issues and the automation the organisation and management of back-end resources. The initial goal of the cluster is to improve user experiences and efficient use of the available resources. Table 6 lists the members of the cluster by call type.

Table 6 New Approaches for Infrastructure Services Cluster Members

Project Name	Call Type
AppHub	H2020 Call 1
ARCADIA	FP7
BEACON	H2020
CloudSpaces	FP7 Call 8
ClouT	FP7
CloudWave	FP7 Call 10
DICE	H2020
ENTICE	H2020 Call 1
iKaaS	H2020
INPUT	H2020 Call 1
IOStack	H2020 Call 1
Mikelangelo	FP7 Call 7

Mobile Cloud Networking	H2020
Mo-bizz	FP7
MODAClouds	FP7
MUSA	H2020
RAPID	H2020 Call 1
SPECS	FP7
SWITCH	FP7 Two Stage

Below is a timeline of cluster activity from June 2015 to May 2016.

Table 7 New Approaches to Technology Infrastructure Cluster Actual and Proposed Cluster Activity 2015

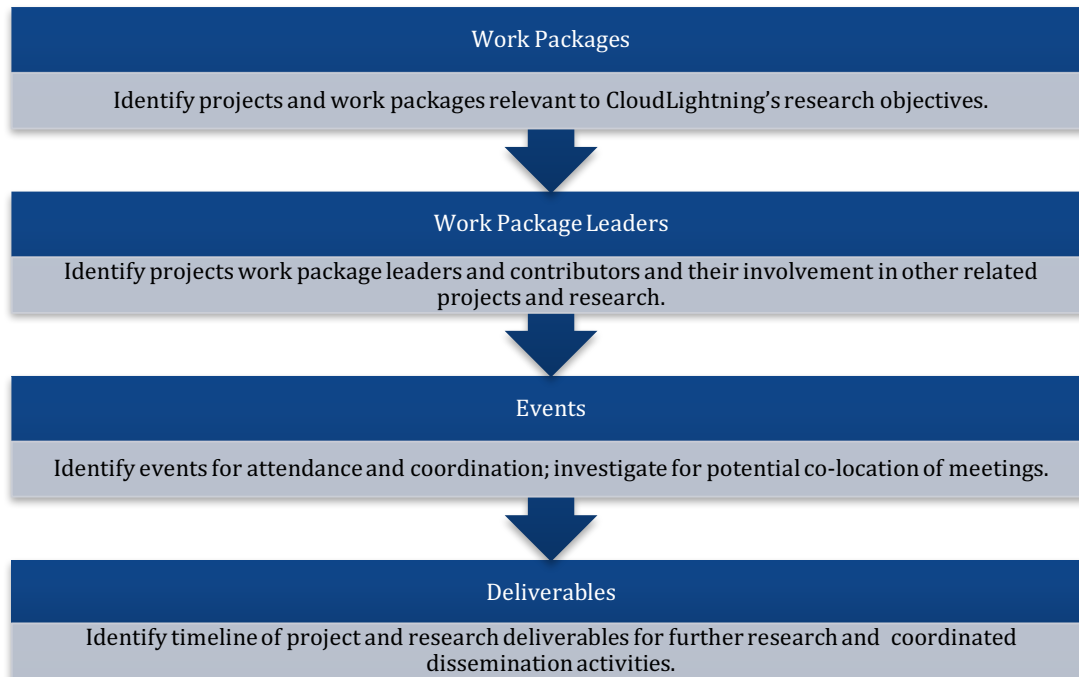
Date	Milestone
19th June 2015	Membership Established
7th July 2015	First Telco
10th July 2015	Document- strategy and means for collaboration
21st Sept 2015	F2F: MICAS2015
30th Sept 2015	Document: map of challenges
1st Nov 2015	Draft Whitepaper
31st Dec 2015	Final version whitepaper
31st May 2016	Common book / article
30th Sept 2016	Recommendations for WP18/19
7th Oct 2016	Face-to-face meeting and dissemination of the map of challenges at Cloud Forward 2015
7th Nov 2016	Form for consultation about the WP18/19 directions
31st Dec 2016	Document – recommendations for WP18/19
31st Jan 2016	Document – draft of a common white paper
28th Feb 2016	Final version of the white paper
15th May 2016	Call for paper – special issue reflecting the status of the action implementations in SCPE

2.1.3 Identification of Other Relevant Projects

In addition to specific existing ICT projects, CloudLightning will monitor for relevant new projects to engage with. This includes projects that make use of high performance computing including life sciences (and specifically genomics), oil and gas exploration and media and entertainment (and specifically ray tracing and 3D image rendering).

CloudLightning has compiled a list of EU projects for examination for potential fit, engagement and collaboration across similar or related research themes. Figure 1 below contains a proposed methodology to identify key opportunities for concertation and bi-directional collaboration where appropriate and relevant.

Figure 1 Project Identification Process for CloudLightning Concertation



Projects identified for further examination are listed below.

In addition to general engagement in clusters, CloudLightning has identified an initial list of 15 EU projects for potential direct engagement. This list summarized in Table 8 is subject to change throughout the life of the project.

Table 8 EU Funded Genomics projects with potential for CloudLightning engagement

Project Name	Call ID	Domain areas	URL	HPC	Cloud	Start dates	End
BiobankCloud	FP7-ICT-2011-8	Genomics	http://cordis.europa.eu/project/rcn/106495_en.html	N	Y	2012-12-01 to 2015-11-30	
MR.SYMBIOMATH	FP7-PEOPLE-2012-IAPP	Genomics	http://cordis.europa.eu/project/rcn/106778_en.html	Y	Y	From 2013-02-01 to 2017-01-31	
CELAR	FP7-ICT-2011-8	Genomics	http://cordis.europa.eu/project/rcn/105163_en.html	N	Y	From 2012-10-01 to 2015-09-30	
CLOUD-VAS	H2020-SMEINST-	Oil & Gas	http://cordis.europa.eu/project/rcn	N	Y	From 2015-06-01	

	2-2014		/196659_en.html			to 2017-06-01
C2NET	H2020-FoF-2014	Ray Tracing	http://cordis.europa.eu/project/rcn/193440_en.html	N	Y	From 2015-01-01 to 2018-01-01
CACTOS	FP7-ICT-2013-10	Ray Tracing	http://cordis.europa.eu/project/rcn/110456_en.html	N	Y	From 2013-10-01 to 2016-09-30
OpenI	FP7-ICT-2011-8	Ray Tracing	http://cordis.europa.eu/project/rcn/105553_en.html	N	Y	From 2012-10-01 to 2015-03-31
INDIGO-DataCloud	H2020-EINFRA-2014-2	HPC	http://cordis.europa.eu/project/rcn/194882_en.html	Y	Y	From 2015-04-01 to 2017-10-01
MIKELANGELO	H2020-ICT-2014-1	HPC	http://cordis.europa.eu/project/rcn/194319_en.html	Y	Y	From 2015-01-01 to 2018-01-01
BigStorage	H2020-MSCA-ITN-2014	HPC	http://cordis.europa.eu/project/rcn/193971_en.html	Y	Y	From 2015-01-01 to 2019-01-01
HOST	FP7-REGPOT-2011-1	HPC	http://cordis.europa.eu/project/rcn/101483_en.html	Y	Y	From 2012-01-01 to 2014-12-31
EUBrazilCC	FP7-ICT-2013-EU-Brazil	HPC	http://cordis.europa.eu/project/rcn/109810_en.html	Y	Y	From 2013-10-01 to 2016-01-31
CloudFlow	FP7-2013-NMP-ICT-FOF	HPC	http://cordis.europa.eu/project/rcn/109868_en.html	Y	Y	From 2013-07-01 to 2016-12-31
MIDAS	FP7-ICT-2011-8	HPC	http://cordis.europa.eu/project/rcn/105053_en.html	Y	Y	From 2012-09-01 to 2015-08-31
SAVE	FP7-ICT-2013-10	HPC	http://cordis.europa.eu/project/rcn/109227_en.html	Y	Y	From 2013-09-01 to 2016-08-31
SESAME-NET	H2020-EINFRA-2014-2	HPC	http://cordis.europa.eu/project/rcn/194966_en.html	Y	Y	From 2015-06-01 to 2017-06-01
VI-SEEM	H2020-EINFRA-2015-1	HPC	http://cordis.europa.eu/project/rcn/198274_en.html	Y	Y	From 2015-10-01 to 2018-06-01

2.2 International Standardisation Organisations

CloudLightning is affected by and can contribute to a wide range of standardisation efforts in cloud computing, high performance computing and in some instances in targeted application domains i.e. genomics, oil and gas exploration and ray tracing. In WP2, Task 2 CloudLightning

will ensure that relevant reference organisations and initiatives are monitored so that the standards do not evolve beyond CloudLightning’s existing plans within the duration of the project.

A number of standardisation organisations and initiatives have been identified based on their relevance to CloudLightning and existing relationships between these organisations and initiatives and CloudLightning partners. The number of organisations and potential engagements will be reviewed periodically and increased over the duration of the project.

Table 9 Preliminary List of International Standardisation Bodies

Stakeholder	Description
European Telecommunications Standards Institute (ETSI)	European Standards Organisation for globally-applicable ICT standards. The ETSI work programme includes project energy efficiency, cloud computing and security. ETSI lead the Cloud Standardization Coordination (CSC) initiative.
ISO/IEC JTC 1/SC 38 Cloud Computing and Distributed Platforms	Standardization in the area of Cloud Computing and Distributed Platforms including but not limited to Service Oriented Architecture (SOA), Service Level Agreements, Interoperability and Portability, and Data and their Flow Across Devices and Cloud Services.
Distributed Management Task Force (DMTF)	The DMTF has a number of working groups relevant to CloudLightning particularly under the Cloud Management Initiative including the Cloud Management Working Group (CMWG), Cloud Infrastructure Management Interface (CIMI), Cloud Auditing Data Federation Working Group (CADF), the Software Entitlement Working Group (SEWG) and the Open Virtualization Working Group (OVF).
Open Grid Forum (OGF)	OGF is an open global community committed to driving the evolution and adoption of advanced applied distributed computing, including cloud, grid and associated storage, networking and workflow methods. The Open Cloud Computing Interface (OCCI) comprises a set of open community-lead specifications delivered through the Open Grid Forum.
OpenStack	The OpenStack project is a global collaboration of developers and cloud computing technologists producing the open standard cloud computing platform for both public and private clouds.
OASIS	OASIS is a nonprofit consortium that drives the development, convergence and adoption of open standards for the global information society. Their work programme includes cloud computing and energy efficiency. The Topology and Orchestration Specification for Cloud Applications (TOSCA) work is

	of specific interest.
NAFEMS High Performance Computing Working Group	The HPC Working Group was set up to provide a vendor-neutral, end-user driven consortium that promotes the effective use of High Performance Computing in engineering simulation. As well as supporting stakeholder dialogue to improve the scalability of algorithms and data formats used in engineering simulation, particularly for computational structural mechanics, they are developing an independent database of realistic test problems for performance benchmarking.
Genomic Standards Consortium (GSC)	The GSC is an open-membership working body to promote mechanisms that standardize the description of genomes and the exchange and integration of genomic data.
The Global Alliance for Genomics and Health (GA4GH)	The GA4GH Data Working Group concentrates on data representation, storage, and analysis, including working with platform development partners and industry leaders to develop standards that will facilitate interoperability.

2.3 Policy Making Organisations

Policy making organisations and those that influence policy will impact the future adoption of CloudLightning as an architecture, both directly and indirectly. These include government, government agencies, regulators, trade associations and other organisations who influence decisions on research and political priorities. For example, CloudLightning may be of interest to political initiatives to promote the adoption of cloud computing by the private sector or public sector. Similarly, prioritisation of low cost genome processing by a health ministry could result in greater focus on cloud computing as a solution for genome processing and thus adopting CloudLightning.

In addition to targeting European Union institutions, directorates and expert groups and member state government units and agencies, CloudLightning has identified the following indicative stakeholders for engagement during the duration of the project. The number of organisations and potential engagements will be reviewed periodically and increased over the duration of the project.

Table 10 Indicative List of Policy Making Organisations for Concertation

Stakeholder	Description
e-Infrastructure Regulatory Group	The e-IRG mission is to pave the way towards a general-purpose European e-Infrastructure. They recommend resource sharing policy guidelines to

	national and international organisations and interact with eScience application user groups as enablers of e-Infrastructure.
European Science Foundation	European organization with an aim of generating a solid evidence-base to support the decision-making work of clients and other scientific associations in Europe.
Digital Europe	Digital Europe represents the digital technology industry in Europe. Members include some of the world's largest IT, telecoms and consumer electronics companies and national associations from every part of Europe.
European CIO Association	The European CIO Association (EuroCIO) is the only European, independent, not-for-profit representative for the large IT-users (demand side of IT), both private and public. As well as education and networking events for members, EuroCIO externally represents the larger user communities to the main IT suppliers as well as European authorities.
European Association of Research and Technology Organisations	European Association of Research and Technology Organisations (EARTO) is a non-profit international association established in Brussels to promote and defend the interests of RTOs in Europe by reinforcing their profile and position as a key player in the minds of EU decision-makers and by seeking to ensure that European R&D and innovation programmes are best attuned to their interests. The Association represents the interests of about 350 RTOs from across the European Union and "FP-associated" countries (91 direct members, some of which are associations regrouping several RTOs).
Geant	In addition to providing Network Services to the European research and academic community, Geant are active in promoting advanced networks and associated e-infrastructure services at a government level.
IHE-Europe	IHE-Europe engages clinicians, health authorities, industry, and users to improve healthcare interoperability by helping national and European stakeholders and policy-makers in adopting, promoting and implementing IHE specifications and developing tools and services in support of interoperability testing.
MedTech Europe	MedTech Europe is an alliance of European medical technology industry associations. It has two members: EDMA, representing the European in vitro diagnostic

	industry; and Eucomed, representing the European medical devices industry.
EuropaBio	EuropaBio is the European Association for Bioindustries and was created in 1996. Our mission is to create an innovative and dynamic biotechnology-based industry in Europe. Their membership is composed of 60 corporate members, 13 associate members and Bio regions, and 16 national biotechnology associations, who in turn represent more than 1800 small and medium sized biotech companies in Europe.
Society of Petroleum Engineers	SPE is the largest individual member organization serving managers, engineers, scientists and other professionals worldwide in the upstream segment of the oil and gas industry.
European Council for an Energy Efficient Economy	The European Council for an Energy Efficient Economy is a membership-based non-profit association. As Europe's largest and oldest NGO dedicated to energy efficiency, it generates and provides evidence-based knowledge and analysis of policies, and facilitates co-operation and networking.
Oil & Gas UK	Oil & Gas UK is the leading representative body for the UK offshore oil and gas industry.
Norwegian Oil & Gas Association	The Norwegian Oil and Gas Association (Norwegian Oil and Gas) is a professional body and employer's association for oil and supplier companies engaged in the field of exploration and production of oil and gas on the Norwegian Continental Shelf.
Danish Export Association Oil & Gas Technology Group	DOGTG is the largest Danish group within the oil and gas industry and represents 120 technology suppliers to the oil and gas industry.
CARTOON	CARTOON is an international non-profit association based in Brussels supporting the animation industry.

2.4 Funding Bodies

Self-organising self-managing architectures for heterogeneous clouds represent a fundamentally new paradigm for cloud computing that could have profound effects on the competitiveness and availability of innovative and transformative technologies in the life sciences, energy and design sectors. Similarly, the removal of upfront capital expenditure for accessing high performance computing infrastructure through cloud provision will increase the competitiveness of SMEs and smaller academic and research organisations in these and other HPC sectors. CloudLightning will engage with the European Commission Horizon 2020 programme and national research funding agencies to increase investments in computer

science, scientific and cloud computing. In addition, CloudLightning will target foundations and other funding organisations to support and extend research in this area by building funding cases not only for scientific research but societal impact. Indicative non-EU and non-Exchequer funding bodies are listed below:

Table 11 Indicative List of Non-EU Non-Exchequer Funding Bodies for Concertation

Stakeholder	Description
Wellcome Trust	The Wellcome Trust is an independent global charitable foundation dedicated to improving health, because good health makes life better. They currently invest £700m per annum in research.
Calouste Gulbenkian Foundation	The Calouste Gulbenkian Foundation is a charitable foundation established in Portugal in 1956 with cultural, educational, social and scientific interests.
Knut and Alice Wallenberg Foundation	The Knut and Alice Wallenberg Foundation is a charitable foundation is to promote scientific research, teaching and education beneficial to the Kingdom of Sweden. The Foundation primarily grants funding in natural sciences, technology, and medicine.
The Robert Bosch Stiftung	The Robert Bosch Stiftung is one of the major German foundations associated with a private company and has managed the philanthropic bequest of company founder Robert Bosch for over 50 years. It funds research in health, science, education and society.
VISTA (Statoil & Norwegian Academy of Science and Letters)	VISTA is a collaborative partnership between Statoil and the Norwegian Academy of Science and Letters. VISTA's overall vision is to stimulate basic mathematical and scientific research related to the exploitation and management of Norway's petroleum resources.
Volkswagen Foundation	The Volkswagen Foundation (VolkswagenStiftung) is the largest private research funder and one of the major foundations in Germany. Since 1962 the Foundation has granted more than 4.2 billion euros of funding for over 30,000 projects. Foundation capital amounts to 2.9 billion euros. It funds research projects in path-breaking areas and provides assistance to academic institutions for the improvement of the structural conditions for their work. In particular, the Foundation perceives its mission in supporting aspiring young researchers and in promoting interdisciplinary and international collaboration.
Riksbankens Jubileumsfond	Riksbankens Jubileumsfond (RJ) is an independent foundation with the goal of promoting and supporting research in the Humanities and Social Sciences. RJ place an emphasis on interdisciplinary research and

	also support research infrastructure.
Bill & Melinda Gates Foundation	Bill & Melinda Gates Foundation is the largest private foundation in the world. The primary aims of the foundation are, globally, to enhance healthcare and reduce extreme poverty, and in America, to expand educational opportunities and access to information technology.
William & Flora Hewlett Foundation	The William and Flora Hewlett Foundation funds global development programs on governance, education, improved policy analysis and better access to agricultural markets for farmers in developing countries. Initiatives on energy efficiency and renewable energy are expected to take center stage as the foundation expands its environment and energy portfolio.
Rockefeller Foundation	The Rockefeller Foundation's focus areas are international in scope: basic survival safeguards, global health, climate and environment, urbanization, and social and economic security. It is expected to increase funding for health and environment related programmes.
Network of European Foundations for Innovative Cooperation	NEF are an operational platform that seeks to develop joint initiatives between foundations and other actors.

3 Concertation Activities

CloudLightning's concertation activities will focus on stakeholders not addressed directly through (i) the project partners, (ii) the External Advisory Board, (iii) dissemination activities, and (iv) the exploitation activities. As such, the focus of concertation will be on engaging and collaborating with:

- EU Projects
- International Standardisation Organisations
- Policy making organisations
- Funding bodies

Concertation activities will be supplemental to the wider dissemination and exploitation plans and will include formal and informal components.

For each of the concertation priority categories, a contact database will be collated and a plan will be developed with clear objectives and messaging for contacting each stakeholder type. Contact with a given stakeholder contact will be allocated to CloudLightning partners on the basis of their existing relationship with a target.

Formal concertation activities may include:

- Participation in scheduled cluster activities and events;
- Participation in Horizon 2020 and other European Commission activities and events as notified by the Commission, DG Connect, CloudWatchHub and others;
- Participation in formal consultation processes;
- Participation in stakeholder activities and events;
- Preparation of briefing papers for each stakeholder category;
- Contribution of CloudLightning code to open source initiatives;
- Participation and contribution to standards setting activities; and
- Organisation of specific events including online meetings, seminars, workshops, webinars, demonstrations and other forms of strategic engagement to proactively involve relevant stakeholders.

Informal concertation focuses on:

- Attendance and participation in online events organised by stakeholders

- Informal discussions and meetings with stakeholders

CloudLightning has commenced concertation activities including:

- National Conference on Cloud Computing and Commerce (Dublin, Ireland) – CloudLightning hosted a conference track focussed on EU Project Concertation with presentations from CloudLightning, MODACLOUDS, CACTOS and MO-BIZZ
- Participation in the Inter-cloud Challenges, Expectations and Issues Cluster as detailed in 3.1.1
- New Approaches for Infrastructure Services Cluster as detailed in 3.1.2
- Presentation by the FP7 HARNESS at the CloudLightning Consortium meeting in July 2015
- Attendance at ICT 2015 including participation in the PICSE networking session and the sessions on “A trusted cloud ecosystem”, “Cloud computing and standards: better together!” and the CLIPS Project on public sector cloud procurement.

CloudLightning has sourced supplemental funding from the Science Foundation Ireland ISCA Japan programme to include CloudLightning in a seminar on cloud computing at the Irish embassy in Tokyo Japan on 18th February 2016 and a workshop with IBM Research on 19th February 2016. While in Japan, CloudLightning will schedule informal meetings with major global multinational hardware vendors and systems integrators including SAP, Hitachi, Fujitsu, Novartis and others.

On 12th April 2016, CloudLightning is holding a workshop in Dublin on HPC in the Cloud as part of the National Conference on Cloud Computing and Commerce 2016.

The majority of concertation activities will take place in 2016 and 2017. Concertation is highly dependent on achieving major milestones including the architecture specification and integrated use cases in 2016 and the release of the PoC in 2017.

4 External Advisory Board

CloudLightning has set up an External Advisory Board (EAB) comprising academic and industry experts from areas relevant to both computer science (Cloud and HPC) and the project's three target application domains (genome processing, oil and gas exploration and ray tracing). The composition of the EAB is representative of the project's stakeholders and target audience. CloudLightning will leverage the combined experience of the EAB to inform its concertation strategy and activities to make sure they are aligned with the overall project objectives.

As of January 2016 (M12), there are 12 confirmed members of the EAB, however CloudLightning will further seek new opportunities to enhance professional expertise:

Table 12 CloudLightning External Advisory Board, confirmed members

Name	Company	Sector	Country
Prof Dan Marinescu	University of Central Florida	Academia	US
Prof Mary Wheeler	University of Texas at Austin	Academia	US
Prof Jesus Carretero	Universidad Carlos III de Madrid	Academia	Spain
Prof Dieter Kranzmüller	Ludwig Maximilians Universitat	Academia	Germany
Michaela Blott	Xilinx	Private	Ireland
Aidan Gallagher	Rendicity	Private	Ireland
Brian Boyle	HEANet	Public	Ireland
Ronan Dalton	IBM	Private	UK
Victor Gonzalez	Next Limit Technologies	Private	Spain
Robert Jenkins	CloudSigma	Private	Switzerland
Alison Kennedy	EPCC	Public	UK
Denis Condon	Microsoft	Private	Ireland

5 Performance

KPIs establish how well CloudLightning is performing in its Concertation activities. Performance will be measured by the overall number of engagements and outputs resulting from concertation activities in Years 2 and 3, namely:

- Direct knowledge sharing with a minimum of 6 EU projects per annum (6)
- Participation and position paper per cluster (2)
- Minimum of 2 presentations per partner per annum to their national stakeholders (32)
- Minimum of 1 briefing paper per stakeholder group (4)
- Participation in a minimum of 2 standard setting activities per annum (2)
- 1 formal briefing event per stakeholder group per annum (4)
- Minimum of 5 informal meetings per stakeholder group per annum (10)
- Minimum of 4 EAB meetings (3)

6 Conclusion

This document provides an overview of the concertation strategy and key activities that the CloudLightning consortium will execute to maximise the benefits and impact of the project's research outputs and deliverables in collaboration with the stakeholders, initiatives and projects listed herein. The plan and set of activities outlined in this document are supplemental to those listed in the Dissemination and Exploitation Plans however some overlap is expected. This Concertation Plan should not be considered static and are subject to alteration and improvement in the best interests of the project and where new and greater opportunities for concertation and collaboration arise.

The performance of the plan will be monitored and measured and changes will be made as necessary under the guidance of the work package leader and the Project Coordinator.