



**European Cooperation  
in the field of Scientific  
and Technical Research  
- COST -**

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**Brussels, 15 May 2014**

**COST 045/14**

**MEMORANDUM OF UNDERSTANDING**

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Subject : Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action IS1401: Strengthening Europeans' capabilities by establishing the European literacy network

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Delegations will find attached the Memorandum of Understanding for COST Action IS1401 as approved by the COST Committee of Senior Officials (CSO) at its 190th meeting on 14 May 2014.

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**MEMORANDUM OF UNDERSTANDING**  
**For the implementation of a European Concerted Research Action designated as**  
**COST Action IS1401**  
**STRENGTHENING EUROPEANS' CAPABILITIES BY ESTABLISHING THE**  
**EUROPEAN LITERACY NETWORK**

The Parties to this Memorandum of Understanding, declaring their common intention to participate in the concerted Action referred to above and described in the technical Annex to the Memorandum, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 4114/13 “COST Action Management” and document COST 4112/13 “Rules for Participation in and Implementation of COST Activities” , or in any new document amending or replacing them, the contents of which the Parties are fully aware of.
2. The main objective of the Action is to secure a European Literacy Network (ELN) that builds upon existent reading and writing research communities. The ELN will coordinate a global European response to the challenges of the on-going digital revolution.
3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at EUR 116 million in 2014 prices.
4. The Memorandum of Understanding will take effect on being accepted by at least five Parties.
5. The Memorandum of Understanding will remain in force for a period of 4 years, calculated from the date of the first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of section 2. *Changes to a COST Action* in the document COST 4114/13.

## **A. ABSTRACT AND KEYWORDS**

Capabilities are not only abilities that reside inside humans, but they also comprise the political, social, and economic environment. Literacy is a capability whose fulcrum is far away from the individual, depending crucially on societal forces that can hinder or promote human development. The efficiency of this promotion is critically constrained by the availability of accurate knowledge. Knowing about literacy is contingent upon an interdisciplinary web of expertise that can, within a reasonable timeline, produce that sort of knowledge. Such network already exists in Europe, but needs to be sustained so that it can face the demands of the new digital era. Through this Action, reading and writing research communities across Europe are joining, integrating their findings, and aligning their agendas so that they can: 1) develop an integrated and inclusive approach to foundational literacy across Europe; 2) devise a comprehensive framework of developmental aspects of literacy and education in a digital world; and 3) further improve literacy technologies. This will be valuable for promoting citizens' interdependence, participation, and innovation, which are key assets to a united and diverse Europe. For that, Europe needs a Literacy Network via which capabilities can be strengthened to all of its citizens.

**Keywords:** an integrated and inclusive approach to foundational literacy across Europe, developmental aspects of literacy and education in a digital world, improving literacy technologies, literacy as fertile functioning, translational research

## **B. BACKGROUND**

### **B.1 General background**

Malala Yousafzai's recent speech, as recipient of the European Parliament's Sakharov Prize for Freedom of Thought, said it all: "Let us change the ideology of being powerful, the powerful countries shall not be judged by counting their soldiers and navy, but rather we must see which country has the higher literacy rate, which country has more educated people, which country has provided their basic rights to citizens"... "There is hope because you are all here, united to help these innocent children... they do not want an iPhone, an Xbox, a PlayStation or chocolates. They just want a book and a pen."

Obviously, books and pens stand for reading and writing, which are artefacts of a unique human capability, that of literacy. Literacy is competence with a written language, which includes the person skills in reading, writing, and in using the myriad of documentary resources that literate

societies accumulate (Olson, 1996). Literacy is deeply valued because it plays key roles both at the societal and at the individual levels. Civilizational achievements such as Law, Religion, Literature, and Science are critically dependent upon collective literacy practices, such as recording and interpretation. For individuals in literate societies, literacy is a means to personal, social, and economic achievement.

A report by the European Union's High Level Group of Experts on Literacy, adopted by the Council of the European Union in November 2012, concluded that "Literacy is a crucial life competence which empowers the individual citizen to develop capacities of reflection, oral expression, critical thinking and empathy, boosting personal development, self-confidence, a sense of identity and full participation in a digital and knowledge economy and society". It also estimated that "one in five 15 year-olds, as well as nearly 75 million adults, lack basic reading and writing skills, which makes it hard for them to get a job and increases their risk of poverty and social exclusion". In the United States, where the data are available, more than 50% of the adolescents with criminal problems and those with history of substance abuse have reading and writing problems (McCardle & Chhabra, 2004). Furthermore, as noted by Olson (1999), literacy and democracy are mutually reinforcing, and since literacy allows for full participation in institutions and societies, it is also a critical catalyst of their transformation. What voice would Malala have, if she could not read and write? Ultimately, the transformations that can be achieved by books and pens are what hold for the wisdom and resonance in Malala's words.

*Literacy as fertile functioning.* Literacy can be source of transformations in societies because literacy is a capability. Capabilities are "substantive freedoms" by which persons can exert choices to achieve alternative combinations of functioning (Sen, 1999). Functioning is the active realization of capabilities, or in Sen's words "the various things a person may value doing or being". As clarified by Nussbaum (2011), capabilities "are not just abilities residing inside a person but also the freedoms or opportunities created by a combination of personal abilities and the political, social, and economic environment." Contrary to common belief, literacy does not reside primarily within individuals, but it originates in the social and depends critically on the political. No one ever learns to read or write alone.

In a detailed and evaluative approach to human capabilities, Nussbaum identified 10 central capabilities that, she cogently argues, decent societies should secure, at a threshold level, to all of its citizens. Literacy is one of such entitlements, and a special one, we argue, because it allows for particular kinds of fertile functioning (Wolff & De Shallit, 2007) that will ultimately foster human and societal development. Literacy is pivotal in creating other capabilities and by itself promotes autonomy, interdependence, participation, innovation, and capital (both economic and mental).

These assets are key to a united and diverse Europe, striving to keep its leading role at the frontiers of human and societal development. To secure such role, Europe needs a Literacy Network through which interdisciplinary knowledge can be integrated and the central capabilities strengthened for all of its citizens.

*Global situation and previous COST Actions.* Eighteen years ago, when Olson published his seminal book “The World on Paper”, the internet was still largely in its infancy, and the forms of discourse involved in literacy were still essentially paper-based. Since then, there has been a major shift in the object of literacy. Recently, both Michel Serres (2012) and Jurgen Habermas (2013) have emphasized that the on-going digital revolution is changing the nature of literacy and its impact in society. Serres characterizes this as the third major revolution in the development of the pair medium-message in human history. The first revolution was introduced by the invention of writing, the second by the invention of printing press, and the third by the invention of computer (and the multiple portable forms it now takes). Each of these revolutions created a radically different world for humans to inhabit. A fundamental aim of the proposed COST network is to coordinate a global European response to the challenges of the brave new digital world.

Europe has long championed the universalization of literacy, many of its countries regularly attain top positions in literacy rankings (see OECD’s PISA reports, but also UNDP’s Human Development Reports) and has a top-tier community of literacy researchers. Still, great inter-country discrepancies persist (both in literacy achievements and in research vitality) and highly specialized research communities face difficulties in networking, in integrating their gained knowledge, and in translating it to the benefit of policy makers, educators, teachers, and practitioners. COST is one of the best schemes for bringing together these independent research communities and enabling them to produce combined recommendations for practice. It would also enable them to foster a coordinated development of research into literacy as it is re-defined in the digital age.

Of course, COST has funded past networks in the field of literacy research. Take the example of two completed and highly successful networks. Action A8 -Learning Disorders as a Barrier to Human Development lasted between 1994/1999, with many of its achievements coming to light only in the early 2000’s. The most prominent of all, a large cross-linguistic foundational stance in learning to read across many countries in Europe (Seymour, Aro, & Erskine, 2003), and critical contributions to understanding reading and its specific disorder (dyslexia) across languages (Ziegler & Goswami, 2005). COST A8 connected highly specialized teams, most in the field of reading research, working in 16 COST countries. More recently, COST Action IS0703 -The European Research Network on Learning to Write Effectively, completed in 2012, was successful in building

an interdisciplinary network on writing that connected 22 countries and had a strong impact on our understanding of writing not only as a process, but also as a social practice that is taught, learned, and used in diverse contexts from school to workplace (Torrance et al., 2012).

Commendable as the two Actions were, the fact that they were completely independent – one focusing on reading, the other on writing – illustrates one of the major problems that the present proposal is designed to overcome. Literacy involves both reading and writing, as well the interaction between them, but research into the two processes is carried out independently. The global research networks into reading and writing have very few connections between them, not just in Europe, but also in the US. These literacy domains need to converge. COST is an ideal scheme for this purpose because the problem is not that research is not being carried out into reading and writing but that it is being carried out independently with barely any cross-fertilisation. The two fields need to bring their accumulated wisdom together and produce a coordinated set of recommendations for practice. They also need to develop a research agenda to investigate complex interactions between reading and writing as they emerge in new digital environments.

## **B.2 Current state of knowledge**

Literacy research is at the forefront of Cognitive Science research. In particular, scientific knowledge on reading is well advanced (see Snowling & Hulme, 2005) and has begun to have a wide impact on policy and education, as illustrated by the National Reading Panel (2000) initiative in the US, which culminated in an influential review and position paper in *Psychological Science in the Public Interest* (Rayner et al., 2001). The neural basis of reading and its disorders have also become well established in the last decade (Dehaene, 2009). Current cutting-edge research into the basic decoding processes involved in reading focuses on mapping the genetic bases of reading ability/disability (Skiba, Landi, Wagner, & Grigorenko, 2011), on developing a broader view of the basic processes involved that goes beyond the well-established role of phonology in reading, and in developing computerized literacy tools for effective teaching (Lyytinen et al., 2009). Writing research is becoming a mainstream topic for literacy researchers (Bazerman, 2009; MacArthur, Graham, & Fitzgerald, 2006). Since the 1980s, its cognitive theorizing has made important progress (Hayes & Flower, 1980; Hayes, 1996; Galbraith, 2009), its methodological tools and techniques have been considerably refined (Olive & Levy, 2002), models of the development of writing abilities have emerged (Tolchinsky, 2003; Beard, Myhill, Riley, & Nystrand, 2009), and clear recommendations for educational policy and practice have been developed (Graham & Perin, 2007; Graham, Kiuahara, McKeown, & Harris, 2012). Due to these advances, research into writing is a

burgeoning scientific activity with an increasing impact on policy and practice (Alves, 2012). However, as epitomized by the two mentioned COST Actions, literacy research worldwide is mainly conducted by specialized and distinct reading and writing communities, which belong to different scientific societies (e.g., Society for the Scientific Study of Reading; International Reading Association, Special Interest Group on Writing of the European Association for Research on Learning and Instruction), attend separate conferences, and publish the bulk of their work in highly specialized journals. Even though much progress has been made in individual fields, these communities need to meet, exchange, integrate their findings, further advance their research agendas, and ultimately contribute to a coherent, far-reaching positive change in society. Achieving these goals depends critically on having a large and dense European Literacy Network.

### **B.3 Reasons for the Action**

Owing to previous COST funding, the currently distinct European reading and writing networks became noticeable at the global level. They advanced scientific knowledge on literacy and began to improve policy decisions and education. These changes were ignited, but they need to be sustained, particularly in an adverse context that favours sparse research communities, few cross bordering, and an evermore reduced funding for networking and capacity building.

The need to develop a comprehensive, coherent, and integrated scholarly view of literacy practices is probably the current most critical task faced by the field, and Europe is in a privileged position to provide such framework. Europe not only has most of the leading investigators in literacy, but, more crucial, it has a rich and diverse set of cultures, countries, and languages. This diversity is the critical terrain where scientists ought to achieve an all-embracing view of literacy.

In addition to bringing together separate research communities, implementing a dense scientific programme (see section D), promoting capacity building (especially in Early-Stage Researchers, ESR), and carrying many think tank initiatives, the Action shall also be evaluated by the societal impact it will have across European countries. These are not only linguistically diverse, but also heterogeneous in the capabilities and functioning of its citizens. Specifically, high contrasts are located at both Eastern and Southern Europe, and in several minorities across countries, as shown by recent Human Development Indexes (HDI) and Inequality-adjusted HDI. Steps towards reducing these contrasts will be taken by the Action through the raise of public awareness to the pivotal role of literacy in society, and through interactions with policy-makers, teachers, practitioners, relevant stakeholders, and the media, both at the national and international level. Summarizing, this Action anticipates scientific advancement in literacy research and interaction with relevant societal forces

as necessary means to foster societal progress and European welfare.

#### **B.4 Complementarity with other research programmes**

This COST Action will be key not only to preserve small-scale networks built within recently completed or on-going European research projects, but also to bring international teams of experts in reading and writing into contact with each other. Rather than overlapping them, the Action will add value to the following projects: (1) ATHEME: Advancing the European Multilingual Experience, FP7-SSH 613465 (EUR 6 403 830) – accepted; (2) METAFORA: Learning to Learn Together: A Visual Language for Social Orchestration of Educational Activities, FP7-ICT 257872 (EUR 3 116 434) – in execution; (3) LITERACY: Online Portal for E-Learning and Supporting Social Inclusion of People with Dyslexia, FP7-ICT 288596 (EUR 3 322 910) – in execution; (4) ILEARNRW: Integrated Intelligent Learning Environment for Reading and Writing, FP7-ICT 318803 (EUR 2 326 600) – in execution; (5) FIRST: A Flexible Interactive Reading Support Tool, FP7-ICT 287607 (EUR 4 594 661) – completed in 2013; (6) FLUENT: A Science-Based Tool for Training Fluency Literacy for Teachers and Learners, 510127-LLP-1-2010-1-FI-Comenius-CMP (EUR 367 894) – completed in 2013; (7) COSYNE: Multi-Lingual Content Synchronization for Wikis, FP7-ICT 248531 (EUR 3 124 053) – completed in 2013; (8) TERENCE: An Adaptive Learning System for Reasoning about Stories with Poor Comprehenders and their Educators, FP7-ICT 257410 (EUR 2 730 828) – completed in 2013; and (9) ELDEL: Enhancing Literacy Development in European Languages, FP7-PEOPLE 215961 (EUR 3 752 311) – completed in 2012.

### **C. OBJECTIVES AND BENEFITS**

#### **C.1 Aim**

The main objective of the Action is to secure a European Literacy Network (ELN) that outlives its initial, but crucial funding. This network will generate research collaborations and serve as a forum through which interdisciplinary knowledge on literacy in a digital world can be integrated, augmented, and acted upon in ways that will raise European literacy research leadership, European educational standards, and will increase global public awareness on the pivotal role played by literacy in fostering human capabilities. In other words, by securing the ELN, the Action will allow researchers to connect, integrate the existent knowledge on reading and writing, develop a comprehensive approach to literacy, and train ESR in cutting-edge research methods. At the same

time the network will strive to translate gained knowledge into a clear form that eases communication with other societal forces to have a more direct and efficient impact on education and public opinion, which eventually will strengthen European citizens' capabilities.

## C.2 Objectives

More specifically, the objectives of the Action are threefold and target the:

*1) scientific impact:* a) Connect researchers from reading and writing communities, which until now have worked largely apart. The network is also open to researchers of other notational systems as several commonalities are shared with literacy research. b) Integrate existent knowledge by conducting literature reviews (published as special issues of literacy journals, 3 are foreseen), which will be instrumental to (see next objective). c) Develop a comprehensive understanding of literacy and literacy practices in Europe. d) Train the next generation of interdisciplinary researchers in the wide-open field of literacy, which needs to keep the depth of its expertise, but crucially without losing touch with the wider picture and the importance of open collaboration with other interdisciplinary literacy researchers dealing with apparently different questions. e) Establish common research agendas that will increase applications and success rate of research teams when applying to national research grants. f) Leverage interdisciplinary applications to European calls in the Horizon 2020 framework. Applications to other large international calls will also be encouraged. g) Enhance scientific publications in top-tier outlets for science communication. h) Gather worldwide expertise in literacy by publishing, at the end of the Action, an International Handbook of Literacy (IHL). i) Translate available scientific knowledge on literacy to a format that can be readily understood by the media and general public. This shall be evident in the public website of the Action and all the press releases disseminated in the Action's countries.

*2) technological development:* a) Foster the development of digital tools to aid literacy learning and teaching. b) Foster the development of tools and techniques to further improve scientific study of literacy. c) Provide guides to support standardization on collecting and encoding literacy data. d) Develop empirically validated tools for assessing multilingual literacy. e) Establish a multilingual research database/corpora for standardizing and sharing literacy data.

*3) and societal advancements:* a) Connect the network to other relevant societal players by teaming up with critical national and international stakeholders and policy-makers. b) Connect research on literacy with the literacy industries (e.g., journalism, literature, web 2.0 based platforms, etc.). c) Open the network to educators, practitioners, and interested general public. d) Publish a green paper on evidence-based methods for enhancing literacy education and improving literacy practices across

curricula. This encompassing view of literacy (not only reading and writing, but also including the use of other notational systems) shall inform the development of curricula and teaching that are more coherent, balanced, and effective. e) Provide legal constitution to the European Literacy Network. f) Raise public awareness on the pivotal role of literacy in society. g) Make Europe a more inclusive society by ensuring that all its citizens can have means to support their literacy practices, regardless of language, age, SES or disability. h) Provide means to empower the less developed countries to catch up with research and educational best practices.

Progress towards the achievement of these goals will be regularly assessed by the Action's Steering Group, this will be a mandatory topic on the yearly reports and evaluated by the Action's Management Committee.

### **C.3 How networking within the Action will yield the objectives?**

COST provides several tools that will render efficient the pursuit of the objectives stated above. The Action's MC will be critical to coordinate literacy research in Europe, to develop cooperation among participating countries, and to promote its worldwide impact through the involvement of key global leaders in literacy research. The Action's SG will be pivotal in achieving the scientific objectives, which, through the creation of a series of knowledge objects (books, special issues, IHL), will develop a comprehensive framework of literacy research worldwide. Editorial teams and meetings will also be crucial to build these knowledge objects. Throughout the Action, this coherent and systematized body of knowledge will find its way into promoting changes in policies and in education.

COST scientific events (conferences and workshops) will be the major avenues through which knowledge sharing and connection will happen. An important feature of these events is that they will be open not only to the interested general public, practitioners, and teachers, but also to invited media, relevant stakeholders, and policy-makers. The planning of these events will thus contemplate both scientific and societal interactions.

As with previous literacy COST Actions, this one will also be invaluable in training and connecting the next generation of global literacy researchers, which, due to the current digital revolution, is facing a radical change in what constitutes literacy and literacy practices. Short-Term Scientific Missions (STSMs) will be essential to connect and develop further research. Training Schools will be of the utmost importance for capacity building and contact with cutting-edge topics in reading and writing research. Both of these COST tools will also be vital to achieve many of the Action's technological goals.

Impact in society will be achieved by the already mentioned openness and transparency of the Action to non-research individuals and institutions. Achieving communication clarity in exchanges with non-specialists is also a main concern of the Action. These attributes shall be evident on the Action's website, newsletters, reports, and in the general dissemination strategy of the Action (see section H).

#### **C.4 Potential impact of the Action**

This Action will push European literacy research community to play a leading role worldwide, to foster literacy related technological advancements, and to better perform the critical task of connecting with society, so that Science's responses to societal demands have their desired positive impacts.

A prime impact of the Action will be to connect a rich, specific, but scattered set of literacy research agendas across Europe. The integration of this diversity will be key to advance literacy knowledge and to fill in a gap in our understanding of the new forms literacy is gaining in the digital world (see WG2 in section D).

Increasingly, several technological tools for studying and aiding literacy are being developed. Their presence in the Action (see WG3 in section D) assures that they will be further developed, that innovation will be kept, and, especially, that literacy aids will be available for wider use in educational communities across Europe, and critically in literacy deprived countries.

At the present time, research knowledge on literacy reached a peak but needs to be circulated for societal dissemination and implementation (see WG1 in section D). Much is already known about the best evidence-based practices to foster reading and writing. These advancements need, however, to be clearly stated for policy makers, educators, and practitioners' efficient use. This societal spread of effective ways to promote literacy will help diminishing inequalities across Europe, and by strengthening Europeans' capabilities it will improve European welfare.

A large number of COST countries is included from the start of the Action (29 countries and 1 near neighbour). This strong group is well connected to leading researchers in the US, Latin America, Africa, and Asia (8 countries), and thus the advancements made in Europe can indeed have global scientific, technological, and societal impacts.

#### **C.5 Target groups/end users**

This Action will lead to an in-depth interdisciplinary understanding of literacy, which will then be

channelled through many disseminating digital forms that will target different end groups, as a non-exhaustive list: other scientists (papers, special issues, and scholarly books); policy makers and stakeholders (executive reports and green papers); educators, teachers, and practitioners (newsletters, reports, and guides); media and the general public (newsletter and public website). Relevant international and national stakeholders have already been identified, and some have participated in this proposal. However, the potential huge number of stakeholders operating in the domain of literacy (e.g., literacy promotion associations, mother tongue and foreign languages' teachers associations, learning disabilities defence groups) has made it impractical to systematically involve every one. This is a primary critical step as soon as the Action is put into force. To take these and other actions a Stakeholders Manager is planned to be involved in the Action's SG (see section E). Many researchers within the network already have active civic participation in many stakeholders, which together with COST notability will surely ease cooperation and societal impact.

## **D. SCIENTIFIC PROGRAMME**

### **D.1 Scientific focus**

The scientific programme focuses on three broad research areas, which will be investigated by three Working Groups (WGs). Each of these WGs will share a set of common principles: (1) They will invite participants from both reading and writing research communities, as well as involve policy makers, practitioners, technology designers, and relevant stakeholders; (2) They will operate with an embracing definition of literacy as it is being redefined within a digital environment; (3) They will include explicit comparisons of cross-linguistic and cross-cultural differences among the 38 participating countries; (4) They will develop sharp recommendations for educational policy and practice, and, when relevant, for technological development; (5) They will be committed to developing the research skills of early stage and other researchers across the breadth of the participating countries; (6) They will secure a European Literacy Network that outlives the Action, and thus play an enduring role in strengthening European's capabilities.

The three research areas will focus on: (WG1) An integrated and inclusive approach to foundational literacy across Europe; (WG2) Developmental aspects of literacy and education in a digital world; (WG3) Improving literacy technologies. WG1 and WG2 correspond broadly to a division between the foundational processes involved in encoding and decoding written language and the higher level processes involved in writing extended text in a range of different contexts for a range of different purposes. WG3 will focus on the use of technology (and analytical techniques) to study literacy as well as to support and develop literate practices. The agendas of the three WGs are outlined below.

*1) An integrated and inclusive foundational approach to literacy across Europe.* The focus of WG1 is on the foundational decoding and encoding processes involved in learning to read and write, and on overcoming the range of barriers that prevent individuals from developing this competence. In this strand we aim to identify the key factors involved in ensuring that learners are provided with evidence-informed pedagogy to widen participation, improve attainments and raise aspirations. To address this objective three aspects of inclusiveness have been identified: 1) breadth of theoretical and methodological approaches, 2) inclusion across countries and languages, and 3) inclusion across learners.

Recent years have witnessed much increase in the use of multiple methods (from purely behavioural to neuroimaging studies) and interdisciplinary work in the effort to understand and promote literacy development. These involve both the use of quantitative and qualitative methods and understanding professional requirements to guarantee ecological validity. To ensure fidelity of effective interventions researchers need to work with educational professionals to certify that these are fit for purpose. The Action thus aims to include researchers from different disciplinary traditions using different methodological approaches to work with practitioners in knowledge exchange activities. The philosophy and practice of inclusive education has meant that in many countries struggling pupils are educated in mainstream schools. This has implications for teaching and learning. Schools and teachers need to be able to identify and provide effective practice to support the skills of all pupils. Fortunately, considerable advances have been made in establishing response to intervention models for developing decoding skills. Similar approaches for reading comprehension (Hulme & Snowling, 2011) and writing still need improvement.

There is increasing evidence that oral language skills, reading and writing work in tandem to support learning and attainment (Dockrell & Connelly, 2013). The intrinsic capacities of the child and the context in which they are developing provide a basis for developing effective pedagogies. This interactive model challenges the linear approach to learning often taken by researchers, whereby certain competencies are thought to underpin other developmental skills. For example, it has been well established that reading skills underpin written text production but more recently there is a growing awareness that as children develop writing skills these competencies serve to support more advanced reading including awareness of genre knowledge and techniques for reading comprehension. Moreover, interventions to enhance writing can serve to enhance reading skills (Graham & Hebert, 2011). Similarly preschool children's use of notations provides an infrastructure to develop later literacy skills and these literacy skills further support the use of notations in later planning and revising. Examples abound that the field needs to integrate their findings, so that coherent recommendations can be made, which in turn will be the key to assure inclusive practices

for all learners.

2) *Developmental aspects of literacy and education in a digital world.* The focus of WG2 is on life-long development of the literate mind/brain and how it can be further promoted by education. A crucial point here lies in the richness arising from the diversity of European languages and in the increasing number of educational practices to which research is adding evidence-based support. Modern societies depend heavily on literacy skills. Aware of this, most middle class parents start literacy training soon after birth (Aram, 2006; Neuman & Bredekamp, 2000) and strive to offer their offspring the best possible training up until higher education (Castelló & Donahue, 2012). Still, literacy development does not end in early adulthood as job, economic, societal, and technological demands require new capabilities related to literacy. To account for all this, the field of literacy needs to develop a comprehensive understanding of literacy covering the entire life-span, integrating different discourse genres and purposes, as well as the diverse notational systems that are involved in creating meaningful texts in the digital era. Literacy in a digital world requires a constant interaction between reading and writing, combining information from different sources and different notational systems so as to interpret and to produce texts. Such a comprehensive view of literacy will bridge the gap between scientific research, by nature more specialized, and educational needs, which are more complex and multifaceted.

Researchers from different European countries will review, organize and reflect upon existing research and educational projects in the participating countries. Researchers will share their knowledge in order to gain a deeper insight into the milestones in literacy development and the cognitive linguistic and contextual factors that explain achievements in literacy competence. Detecting knowledge and skills that best predict differences in attainments is fundamental to guide intervention studies, teaching strategies and curriculum development.

Particular effort will be devoted to test the effectiveness of teaching practices on these achievements. Sharing of expertise will enable to generalize the use of digital tools for online analyses of reading and writing processes as well as the use of computational tools for the analyses of the written products. Fulfilling this within the diverse European space will be a major strength of the Action.

3) *Improving literacy technologies.* The focus of WG3 is on the development of technological tools to study literacy processes or to foster literacy learning and teaching.

Digital technologies are now ubiquitous in our societies. They take different forms: from desktop computers to mobile devices (e.g., tablets, smartphones). Some function on computers, while others are available on the Internet so that they can be accessed from any place in the world. They target different purposes: from the serious ones, such as scientific tools, to the not so serious ones, such as

games (van Eck, 2010a). In-between these two are serious games, which are designed for purposes other than pure entertainment. Among the broad category of serious games, edutainment games develop knowledge, education, and learning. Their major advantage relative to traditional education is that they are more appealing and motivating for users. They also promote critical thinking and problem solving skills (Dempsey & van Eck, 2012; van Eck, 2010b).

Literacy technologies can serve at least three purposes: supporting literacy research, helping in literacy assessment, and enhancing literacy capabilities. Literacy research now involves digital technologies for processing the vast amount of data related to the product of writing, the writing operations, and the real time data such as pauses and speed of writing, or writers' or readers' ocular movements (Olive, 2010). These data are collected by various devices (graphics tablets and electronic pens for handwriting, keyloggers for typing; Sullivan & Lindgren, 2006) and applications (Inputlog: van Waes & Leijten, 2006; Eye and Pen: Alamargot, Chesnet, Dansac & Ros, 2006; ScriptLog+TimeLine and EyeWrite: Wengelin, Torrance, Holmqvist, Simpson, Galbraith, Johansson, & Johansson, 2009).

Research has also led to the development of tools that help readers and writers to gain efficiency (e.g., DYS for improving reading fluency, Zorzi et al., 2012; GraphoGame for enhancing orthographic skills in young and struggling readers, Lyytinen et al., 2009). Empirically validated, these learning tools offer great opportunities to enhance literacy development.

However, all these technological solutions are developed separately by different teams and groups. Output, scores, methods, underlying theories are not shared, resulting in negative dissemination of digital technologies that goes against synergy. Considering that situation, WG3 will aim at bringing together researchers, developers, and designers of literacy technologies in order to create a common background and experience that will nourish a pan-European reflexion for standardization, and of major importance, for taking into account specificity of the different European languages.

## **D.2 Scientific work plan methods and means**

The three WGs will develop concerted actions that will further advance scientific research in literacy, more specifically:

WG1 aims to enhance an inclusive and integrated approach to understanding and supporting the development of foundational literacy skills for all learners. The WG aims to achieve this objective by addressing the following four goals: 1) Examining the ways in which the teaching and learning of reading at word, sentence, and text level is integrated with the teaching of writing at word, sentence, and text level. 2) Describe the ways in which teachers aim to meet learner needs for

reading and writing in classroom contexts from early years to adolescence. 3) Examine effective interventions for learners challenged by literacy across European languages in mainstream classrooms. 4) Elaborate models that aim to elucidate the comorbidity with specific learning difficulties.

The starting point is to establish a database detailing the ways in which the teaching of literacy skills is integrated across European contexts (in cooperation with WG2). This descriptive information will be extended by an examination of the scientific evidence that underpins the importance of such approaches. For example there is mounting evidence that oral vocabulary knowledge plays a role in both word recognition and reading comprehension. Having established a database of approaches to teaching and learning of literacy skills, we aim to gather information about the ways in which these are translated in classrooms to meet the children's learning needs at different developmental phases. To achieve this objective we would envisage including policy-makers and practitioners in an interactive workshop.

It is well known that many children struggle with the acquisition of literacy skills and the third objective is to identify the processes and instructional practices for pupils who do not respond to effective quality-first teaching. This will include examination of the sensitivity and specificity of the processes for identifying the pupils, the ways in which intervention programmes are identified and how their efficacy is evaluated in long and short terms. The final objective of WG1 is to examine the ways in which models of literacy development can also help us understand and support struggling writers, specifically students with identified learning disabilities. Models need to account for the specific difficulties experienced by all learners. Models that accurately reflect the learning process will then allow instructors to profile pupils' skills and target interventions and specific barriers to successful learning. To achieve these goals we will draw on: a) Research that emphasizes the interaction across modalities in the supporting of learning literacy skills. b) Capture the ways in which education systems articulate their support of literacy. c) Provide a database of current evidence about effective teaching drawing on the recently established What Works database. d) Train ESR in the profiling of pupils skills and the ways of interpreting variation in individual performance in comparison to group averages. e) Examine statistical models for measuring change over time. f) Develop collaborative research and apply for funding within H2020.

WG2 aims to develop an overall view of literacy development that benefits from European linguistic and social diversity as a natural laboratory to examine the extent to which milestones and predictors of literacy development are general across languages and linguistic conditions of the learner (bilingual/monolingual). This diversity will also enable to compare a wide range of teaching practices and to design intervention studies and innovative educational projects (in cooperation with

WG1).

WG2 will strive to translate gained knowledge into a clear form that eases communication with practitioners, the scientific community and policy-makers that can have a more direct impact on education and public opinion. To this end, key goals to be achieved by the group are: a) Integrate the existent knowledge of milestones in the development of literacy from childhood to adulthood as a useful guideline for assessment and curriculum development. b) Connect research that examines the cognitive and linguistic abilities, which contribute to enhancing literacy development. c) Gather research focusing on the role of teaching practices on reading and writing achievements. d) Develop databases of texts and rubrics from different contexts and languages so as to characterize the qualities of good writing and writing ability of an individual or a group. European diversity of languages and rhetorical traditions will allow the WG to explore how writing quality is subject to stylistic and individual differences. Systematic exploration of the issue of criteria of good writing is imperative before reliable qualitative and quantitative methods of evaluating text quality can be developed. e) Gather research that examines the use of different notational systems to construct texts (maps, graphs or diagrams) in the classroom, and how readers and writers integrate this non-linguistic system in text comprehension and text production. f) Create databases by gathering samples of classroom activities devoted to the composition of instructional texts and the selection of available resources (semiotic, material) in literacy activities. g) Develop computational methods for text analysis (in cooperation with WG3). h) Train ESR in cutting-edge research methods for detecting predictors of literacy. i) Train ESR in statistical methods for analysing individual differences and growth. j) Develop collaborative research and apply for funding within H2020.

WG3 aims to develop technologies that help to enhance reading and writing capabilities. By putting together researchers from different European countries with different languages, who are involved both in the study of literacy and in the development of literacy tools, WG3 will create a context for a deep reflection on how these technologies can be designed and developed on a common and integrated basis. Specifically, the focus of WG3 is on the development of technological tools to study literacy processes, to assess literacy skills, and to foster literacy learning and teaching.

Considering the above mentioned goals of the Action (see Section C), WG3 aims at fulfilling scientific, technological, and societal purposes. On the scientific side, the WG aims at training early stage and confirmed researchers to use the scientific tools developed in the COST Action for studying literacy. WG3 also aims at favouring data sharing between the members of the action by creating multilingual corpora (Lüdeling & Kytön, 2009) and data repositories. On the technological side, this WG intends to set up guidelines and standards in order to make data interpretation comparable and to promote further interoperability of systems. On the societal side, WG3 aims at

making literacy technologies accessible to both the general and academic public. Based on these three main principles, coordinated work of WG3 will be carried out in order to: a) Review existing research tools and recording format. b) Propose standards for allowing exchange of data and interoperability. c) Develop open access databases of texts coupled with real time data. d) Review existing learning tools and assessing their learning effect. e) Publish an inventory of empirically tested literacy tools worldwide. f) Develop open access multilingual corpora of texts. g) Promote an interdisciplinary approach for coupling analyses of products and processes. h) Develop open access databases of literacy assessment. i) Communicate with private companies that sell digital devices used for literacy technologies (e.g., electronic pens, digitizing tablets) or that distribute edutainment programs. j) Train ESR in using the literacy technological tools developed within the network. k) Raise awareness of the general public to the value, but also caveats of literacy technologies. l) Promote the access and use of literacy technologies in developing countries worldwide. m) Develop collaborative research and apply for funding within H2020.

All in all, this far-reaching scientific programme of the Action's three WGs will set the agenda for literacy research in Europe for years to come.

## **E. ORGANISATION**

### **E.1 Coordination and organisation**

Leveraged by the previous COST networks, several national teams are regularly funded by competitive national research calls. Still, the new COST funding is critical for retaining the gained national positions and allowing the teams to establish the ELN network, which will be instrumental for building successful applications to calls within the Horizon 2020 framework, and thus further contributing to strengthening the European leadership in literacy research. The proposed network will rely partly on the former IS0703 web, but will strive to add new countries, and especially new research teams and expertise. A strong commitment is made to reach a balance of 50% of new participants in all Action boards (e.g., Management Committee, MC) and its initiatives (e.g., conferences).

Following the COST guidelines, the Action will be driven, coordinated, and monitored by a MC comprising up to two representatives from 29 starting countries. The MC will be actively supported by the COST Office and a Secretariat provided by the grant holder. The first MC meeting will launch the force of the Action and all MC members will commit to the COST "Code of Conduct (4160/10), to the "Rules for Participation in and Implementation of COST Activities" (4112/13), and will adopt the Action's Memorandum of Understanding. In this founding meeting a Steering

Group (SG) will also be elected. The SG will comprise the MC Chair, MC Vice-Chair, a Scientific Secretary, an Editorial Coordinator, a Communication Manager, a Short Term Scientific Missions (STSM) Manager, an Early Stage Researchers (ESR) Manager, a Meetings Manager, a Stakeholders Manager, three WG Leaders, and three WG Vice-Leaders. Ahead in the Action, if deemed necessary for the successful completion of some initiatives, the MC may choose and vote on creating additional positions within the SG. One of such foreseeable positions is the recruitment of ESR within the WGs for additional leading positions within specific teams and projects.

The SG will be pivotal to accomplish the Action goals. It will be its main role to implement the MC's policies and to organize, coordinate, and follow-up on all Action initiatives. Whenever necessary the SG will also act as an internal review committee for assessing competitive applications, for instance on evaluating STSMs, or workshops' organization. Likely, many of the Action initiatives will be competitive. On the grounds of equal merit (blind evaluation, if needed), priority will be given to participants from countries with the lowest HDIs, or from the least represented groups (e.g., gender, ESR). At a yearly pace the SG will be also responsible for producing reports and detailed assessments that will then be presented for evaluation at the next MC meeting.

#### *Milestones*

The Action will use the full scope of COST instruments with particular attention given to the organization of its main scientific events (2 conferences and 3 workshops) outside of the leading countries in literacy research. A founding conference will occur by the end of Year1, followed by three workshops in each of the succeeding years. A closing conference and the legal establishment of the ELN will mark the end of the Action. Distinguished international experts will be invited to take active roles (e.g., speakers, reviewers) in these scientific events. For optimal funding expenditure, the main boards of the Action (MC, SG and WGs) will meet concomitant with these 5 events. Additionally, the SG and the WGs will meet three more times interspersed with the mentioned gatherings, and at moments most critical to fulfil the Action goals and WGs' projects (please, check section F for a detailed timeline on events and milestones). Necessarily, the SG and WG members will also exchange regularly using communication technologies (e.g., videoconferencing, intranet, email) and will disseminate the outcomes of their collaboration.

Three editorial meetings will occur to prepare publications resulting from the activities of the three WGs (multiple papers and 3 special issues). One main publication, which is offered as a specific milestone for the Action, is the publication of an International Handbook of Literacy. Along with other editorial projects, this will be kept in the agendas for all planned editorial meetings. All editorial teams also commit themselves to, whenever possible, favour an Open Access policy to

every document generated within the Action.

STSMs will be scheduled in three waves preceded by competitive calls spread within the network. For each of these calls 20 STSMs will be offered (summing 60 by the end of the Action). Current worldwide digital interconnection favours short and intense scholar exchanges, thus STSMs will be limited to a maximum of 10 granted days in the host institution.

Training schools (TS) will be scheduled in two waves of 4 schools each, preceded by organization calls spread within the network. Eight TSs are projected and their organization will prioritize scientific, technical, and geographical diversity. TSs will be managed by an ESR Manager, who will work in close collaboration with WGs' Societal Teams (see section E.2) so to assure the optimal spread of knowledge and techniques, particularly among junior scholars.

Dissemination will start as soon as the Action is founded and is detailed in section H. Pivotal elements of the dissemination strategy are the launch of an Action specific website (second quarter), the spread of regular ELN newsletters (quarterly), and frequent contacts with the media. The ELN website will function as a portal for literacy worldwide and will contain all public information generated by the Action. The ELN site will also have an intranet component, where participants can register their CVs, keep track of Action's progress, and use tools to actively collaborate in the Action on-going activities.

A final main milestone of the Action is the legal establishment of the European Literacy Network with its constitution, bodies and members. This shall be an open and public network that will actively promote the mission of the COST Action long after the initial, critical funding. Steps to the legal establishment of the network will be taken throughout the Action, and will be a mandatory topic in the yearly report.

## **E.2 Working Groups**

The Action will have three WGs, whose main scientific focus and goals are expressed in the WGs' names as follows: WG1) An integrated and inclusive approach to foundational literacy across Europe; WG2) Developmental aspects of literacy and education in a digital world; and WG3) Improving literacy technologies. Each WG will be comprised of several teams of researchers joined by common research interests. Starting teams shall be constituted within the first quarter of the Action under the coordination of the WG Leaders, who will keep track of teams, their proposed mission, projects, plans of action and outcomes. The approach to teams formation will be bottom-up and will entail the constitution of several interdisciplinary and multinational teams (a minimum of 4 countries is required). Foreseeable themes for teams' building are those presented in the scientific

programme, but others will be encouraged, especially if innovative and cutting-edge. Teams' structure is flexible so as to enable the joining of other participants and parties to the Action. Throughout Action, each team will carry regular national and international funded research, but will also accomplish specific projects and goals that will derive from the engagement in this far-reaching and unique literacy network.

Each WG will have one mandatory team called the Societal Team. This team will be comprised by one of the WG leaders, one representative from each active team in the WG, the Editorial Coordinator, the Communication Manager, the Stakeholders Manager, and the ESR Manager. The Societal Team will be specifically devoted to expressing the societal implications and policy recommendations of the works conducted in the WG, will keep track of all deliverables from the WG, will take actions to promote ESR involvement in all Action's initiatives, and will take steps to establish the ELN. Descriptions of the projects developed within the WGs' teams and the outputs from the Societal Teams will be mandatory topics in the yearly Action reports.

### **E.3 Liaison and interaction with other research programmes**

All efforts will be made to create synergies with other research programmes concurrent with the Action, particular attention will be devoted to conspecific COST actions or H2020 calls that share the broad literacy theme. Specifically, fruitful interactions are envisaged with the recently approved COST Actions IS1208 (Collaboration of Aphasia Trialists -CATs), IS1305 (European Network of e-Lexicography -ENeL), IS1306 (New Speakers in a Multilingual Europe: Opportunities and Challenges), IS1312 (Structuring Discourse in Multilingual Europe -Text Link). Contacts at the chairs level will be established and organization of overlapping events will be sought.

### **E.4 Gender balance and involvement of early-stage researchers**

Gender balance and involvement of ESR will be evaluated by attaining 50% of gender balance and 40% of ESR in all levels and initiatives of the Action. Participants from countries with lowest Human Development Indexes, women and ESR will have priority access to Conferences, Workshops, STSMs, and Training Schools till the proposed balances are reached. Deep engagement of ESR in the WGs functioning is highly encouraged, specifically teams' leadership and WG's vice-leadership should primarily be taken by ESR participants. These are fully justified by the capacity building properties that these initiatives and roles might have for those benefiting from them, which in turn will benefit the entire network. Commitment to these policies has been in place since the

inception of this Action.

## F. TIMETABLE

This Action will last four years, during which concrete events and specific milestones will be organized and achieved. These are detailed in Table 1. The particular schedule of each event or milestone might be slightly changed according to unanticipated factors that will be pondered by the Action's MC.

Table 1. Events and milestones during the course of the Action.

	Y1				Y2				Y3				Y4			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MC meeting	x			x		x			x				x			x
SG meeting		x		x		x	x		x		x		x		x	
WG meeting		x		x		x	x		x		x		x		x	
ED meeting								x					x		x	
Conference				x												x
Workshop						x			x				x			
STSM			x	x	x		x	x	x		x	x	x		x	
TS			x		x		x	x		x		x		x	x	
Dissemination	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Website		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Newsletter		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
IHL								x					x			x
Legal ELN			x				x					x				x
Report			x				x					x				x
Assessment				x				x					x			x

*Note.* Y = Year; MC = Management Committee; SG = Steering Group; WG = Working Group; ED = Editorial; STSM = Short-Term Scientific Mission; TS = Training School; IHL = International Handbook of Literacy; ELN = European Literacy Network.

## G. ECONOMIC DIMENSION

The following COST countries have actively participated in the preparation of the Action or otherwise indicated their interest: AT, BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IL, IS, IT, LT, MK, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK. On the basis of national estimates, the economic dimension of the activities to be carried out under the Action has been estimated at 116 Million € for the total duration of the Action. This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

## **H. DISSEMINATION PLAN**

### **H.1 Who?**

Dissemination is key to this initiative that will connect international researchers from reading and writing communities who have until now worked largely separated and where there has been previously a distinct lack of cross-fertilisation. Therefore, these international research and academic communities will provide the first target audience for dissemination, with a particular attention on ESR, including those studying for PhD levels. Specific dissemination efforts will also be made at the level of scientific societies operating within the literacy area (e.g., EARLI, SSSR, SIG Writing, IAIMTE)

As a group we will also more effectively target European and National Government policy-makers, regional planners, as well as teachers, practitioners, relevant stakeholders including the NGO's/non-profit sector (associations, foundations, charities, etc.), and the media. Through working together this larger scale dissemination effort will have a greater chance of having an impact on literacy practices at local level across Europe where presently it is rather unfocussed.

The network is open to researchers of other notational systems related to literacy as several commonalities are shared with literacy research and these will also be targeted as part of the dissemination effort. Relevant associated COST actions will also be included in this effort through the organization of overlapping events. We also want to connect our research on literacy with the literacy industries (e.g., journalism, literature, web 2.0 based platforms, etc.). These industries will be targeted initially through social media to raise awareness followed by specific targeting to attend events and invited participation in specific workshops with researchers.

### **H.2 What?**

### *Online dissemination*

1) The dedicated COST Action website. This will provide a lively source of documentation, reports, publications, lists of members and related parties reports from training activities and STSMs, and online newsletters, for academia, stakeholders and general public availability. This website will trial interactive features to be built for the future European Literacy Network website. 2) The creation of the ELN web site through the life of the COST action. Activities on the COST Action website will migrate over the life of the Action to this website. The ELN website will function as a portal for literacy worldwide and will contain all public information generated by the Action. The aim will be to translate available scientific knowledge on literacy to a format that can be readily understood by the media and general public as well as provide more technical and academic sections for researchers. Thus, there will be a public website of the Action with as much open access information as possible including all the press releases disseminated in the Action's countries. The ELN site will also have an intranet component, where participants can register their CVs, keep track of Action's progress, and use tools to actively collaborate in the Action on-going activities. Thus, fostering collaboration and awareness amongst literacy researchers. 3) There will also be active use of social media to advertise and disseminate activities and events and to engage with society and the media more widely. Many of the institutions and workplaces where affiliated Action members are based are well advanced in this sphere and we would invite all our members to announce key Action activities, meetings and press releases through these additional media.

### *Publications*

1) Collaborative effort will be focussed on producing an International Handbook of Literacy that will provide a focus for key findings and issues from research for both researchers and practitioners. 2) Action members will be asked to conduct and collaborate on cutting edge literature reviews (published as special issues of literacy journals) over the course of the Action. 3) These reviews will feed into more general policy papers summarising research areas, which will be produced by WG's over the course of the Action. These will be translated where recommended into local languages. This will be especially useful for parts of Europe where policymakers are not aware of the large amount of international research currently undertaken on literacy. 5) Publish a green paper on evidence-based methods for enhancing literacy education and improving literacy practices across curricula for dissemination across Europe. 6) There will be yearly Action reports, ELN newsletters (quarterly) and reports from the conferences and training schools. Some of these will be in the form of brochures with FAQs in several languages and will include newsletters for the general public.

### *Meetings*

1) The two international conferences will have published conference proceedings and these will be

online. The meetings will be open to the interested general public, practitioners, teachers and to invited media, relevant stakeholders, and policy-makers. 2) The organisers and contributors to the workshops will be encouraged to produce manuals and materials for dissemination from their collaborative work in these events. These will be hosted on the websites. 3) The members of the Action will, of course, be attending many informal and formal organised meetings and conferences throughout the world where their research will be disseminated through all the normal channels available to academia. Access to this powerful direct route to dissemination is one of the key advantages of the Action and at the heart of its cost effectiveness.

#### *Broadcast Media*

1) We will encourage Action members to participate in topical debates and discussions on national and local radio on relevant themes related to literacy and to highlight the important international dimension to this work. 2) Broadcast media will be invited to disseminate direct from the Action Conferences, Meetings, events and findings whenever possible.

### **H.3 How?**

The main objective of the Action is to secure a European Literacy Network. The formation of this network, that will have communication at its heart, will ensure that both impact and dissemination will go beyond the life of the COST Action. Through collaborating together and using COST and the ELN as a medium for dissemination the researchers can more successfully raise public awareness of the pivotal role of literacy in society and create interactions with a wider target audience than they could working nationally.

To achieve this objective and ensure the dissemination activities listed in H.2 are prioritised through the Action we will develop a detailed Communications and Dissemination Strategy from the start. This will be led through the Communication manager in the SG reporting to the MC. The meetings manager and stakeholder managers in the SG will also be key participants in developing this strategy. Together they will be responsible for a log capturing key dissemination activities and for evaluating the engagement, audience spread and the depth of dissemination activities through the Action. They will also take responsibility for the web site development and launch.

The MC will monitor, and review the Communication and dissemination strategy as required. The MC will co-ordinate and lead the production of the Handbook and the Green paper and invite selected action members to produce the literature reviews. They will also produce the yearly reports and newsletters. The conferences and STSM's will be the responsibility of the MC.

Further to this, the Societal Team in each WG will have special responsibility to implement the

Communications and Dissemination Strategy in their own WG and its outputs. This will be managed through the development of their own dissemination action plans to ensure the targeting of audiences, timely issue of press releases and a workable publication and dissemination schedule, the upload of materials to the websites and the co-ordination of their own sections of the websites. This will ensure a cohesive approach to dissemination across the Action.

Action members will engage in communication activities within their own fields of research or professional settings as well as their local geographic locations.