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## **WP9: Communication and Dissemination**

### **Del 9.9 – Paper on best practice in communication and dissemination in distributed research networks**

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**Short Description:** This deliverable takes into account a broad theoretical approach to communication and dissemination; applies this approach to previous, existing, and anticipated practices surrounding the development of a Network of Excellence (NoE), with particular consideration paid to key roles, programmes and deliverables; and finally offers a reflection on the *practical* need to combine these theoretical principles of communication and dissemination in a highly complex, constantly evolving, multi-disciplinary environment.

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**Partners contributed:** LSE, Paolo Dini

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<b>Achievements*</b>	Review of a theoretical approach to communication and dissemination, a practical application of this approach to the NoE environment, and a synthesis of theory and practice into communication and dissemination recommendations for this and other potential networks.
<b>Work Packages</b>	Primary contribution to WP 9. No direct dependencies on other Work Packages, although previous DBE experience contributed significantly.  Future contributions include an articulation of communication and dissemination practices that benefit all Work Packages.
<b>Partners</b>	All
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<b>PhD Students*</b>	Niall Brennan, author Mehita Iqani, author
<b>Outstanding features*</b>	This deliverable provides a theoretical framework for understanding the differentiation between communication and dissemination; however, through the practice and experience of developing and growing a NoE, an outstanding feature is the need to re-conceptualise this differentiation as the coexistence of multiple disciplines and their attendant interests.
<b>Disciplinary domains of authors*</b>	Niall Brennan, Social Sciences; Mehita Iqani, Social Sciences; Neil Rathbone, Communications.

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# Best Practices of Communication and Dissemination in a Network of Excellence

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## Introduction

Communication is a fundamental means of coordinating collective human endeavours, including research. Dissemination of the knowledge gained from research is an essential precursor to using it to the greater benefit of humankind. When bringing together researchers from different disciplines, locations, and cultures to form a network, both communication and dissemination assume added importance, due in particular to the need for enhanced coordination. But at the same time, this increases the levels of complexity due to the diversity of membership to that network.

This document summarises our cumulative knowledge and experience, as well as our specific experiences within the OPAALS and other transnational research environments, on the specific subject of communication and dissemination within a dispersed and collaborative research network. The intention is to provide a theoretical foundation, a practical guide, and a source of knowledge for this and other research groups, including those embarking on a similar trajectory.

## Executive Summary

### *A Common Language*

A common language is essential for all messages, documents, presentations and deliverables within the network. But even when communicators and recipients work within a common language, they need to conceive of a greater language, that is, the language of the project, in order to create a mutual understanding of that network's activities. This language of the project, which can also be thought of as the *metalanguage of the network*, establishes a *communicational common denominator*, which serves as a point of reference for those working within the existing network as well as those considering becoming a part of it<sup>1</sup>.

### *A Common Workspace*

Since the members of a network do not necessarily share a physical workspace, nor do they share a single technological system, there is a need for a common, Internet-based, virtual work environment. This environment needs to include all the standard features and functions that a network of researchers would expect. However, as a virtual work environment entails not only a different sense of space, but also a different *way of interacting within that space*, 'traditional' processes of collaborating on, communicating about, and disseminating research must change commensurately. For example, co-authored work can become a simultaneous process of collaboration through automatic versioning and notifications of change. Additionally, meetings, conferences or presentations can be recorded, their capture communicated, and that information disseminated, whether for the benefit of those not present, or as a new means of availing the information conveyed during proceedings.

### *A Common Dissemination*

The dissemination of knowledge gained through collaborative research is predicated on human interaction. A research group, particularly a large and dispersed one, often will not have the appropriate channels, resources, or support to engage directly with the best means to disseminate

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<sup>1</sup> For a greater discussion of fostering mutual awareness and connectivity within and outside the NoE to collaborate on ideas, contribute to enlargement and establish new directions, see D10.1: 'The design and organisation of plenary sessions, workshops and Summer/Winter schools based on an on-going process of mapping network interactions'. For an analysis of possible relationships between Community Networks and Digital Ecosystems, see D7.1: 'The relationship between Community Networks and Digital Ecosystems'.

that knowledge. Thus there is a need to establish an innovative 'supply chain' of information that is configured to optimise this process of dissemination. One model we have found for this is the regional intermediary, or the *Regional Catalyst* in Digital Ecosystems (DE) research, in which local economic-development actors directly linked to the research group act as the necessary (and often lacking) channel, resource and support mechanism for the flow of knowledge into and from the 'field', or the ultimate beneficiaries of applied research. However, while Regional Catalysts are an important tool for dissemination, a challenge presented by engaging with them is reintegrating the results of their dissemination activities in the field with the academic community.

#### *A Common Need for Coexistence*

In spite of the value of conceiving of communication and dissemination as distinct processes or activities, there is a need to converge them *in practice* within a Network of Excellence (NoE). Therefore, establishing connections, exchanges or interactions – conceived of as *communication* – and contrasted with transmitting or transferring information – conceived of as *dissemination* – take on a symbiotic relationship in an environment characterised by diverse actors, dispersed communities and divergent interests. Better yet, such a practical need for the convergence of these distinct processes or activities may be described as the *coexistence of communication and dissemination* in a NoE.

## Scope of this paper

Collaborative research is often undertaken in two different environments. One is characterised by a 'command and control' arrangement of consistent, formally incorporated research teams. Another consists of individual researchers from independent (and possibly competing) academic institutions who, on the basis of shared intellectual and professional pursuits, agree to collaborate on a research project. Both of these scenarios present unique advantages and disadvantages. Our collaboration, however, transcends these two traditional arrangements through the establishment of an open but semi-formal network of independent researchers working jointly; the kind of collaboration increasingly apparent in Europe as administrators encourage movement away from fragmented corporate, institutional or national efforts and toward pan-European affiliations and alliances based on common ideals and objectives – the European Research Area (ERA). As such, our research network has well defined ideals and objectives, even though the network itself is composed of many, divergently capable and independent organisations.

While the authors of this paper have drawn on their broader bases of theoretical and empirical knowledge, our common focus here is the OPAALS Network of Excellence, (NoE) brought together under a European Union Framework Programme contract. At the same time, the NoE has an open philosophy that encourages and allows for new members outside of the formal contract structure to join. Thus we are constituted by a heterogeneous collection of partners, members and interested parties, all of whom have either an academic or practical investment in the project.

As a result of the constituency of the network, a primary objective of this paper is to set forth what we believe to be some of the best practices in conceiving of, and applying, both the internal or working communication of such a network, and the external or formalised dissemination of that network's collaborative knowledge. As such, this paper does not aim to cover *all* the fundamentals of communication and dissemination; rather, it seeks to synthesize a few, very important theoretical fundamentals of communication and dissemination into their application within our particular and uniquely networked research environment.

As an *ultimately practice-oriented paper*, then, it aims to outline best-practice communication and dissemination strategies for a NoE in Digital Ecosystems (DE) research and other similarly interdisciplinary, large, multinational research projects. In order to connect this outline of strategic practice with the overall aims of a research project such as OPAALS, what follows is a brief theoretical exploration of the core concepts with which this paper, and this particular Work Package of the entire research project, are concerned: communication and dissemination. Accordingly, the following discussion seeks to position these key ideas within a broader context of communication theory, then moves on to four broad discourses of theorizing communication – technology, power, ethics and art – and highlights how each discourse has informed and enriched the professional communications practice in which we are currently engaged.

## Communication and Dissemination in Theory

### *Communication and its Multiple Conceptualisations*

In his book *Speaking into the Air*, John Durham Peters (1999) traces the history of the idea of communication and outlines various historical branches of meaning that feed into our contemporary notion of communication. The first involves the sense of imparting, sharing or making common. This could include partaking in a receptive act – in the behaviourist tradition – where the emphasis is less on a sense of exchange, than on establishing material connections, relations or linkages (Peters, 1999: 7). The second meaning involves the sense of (historically physical, and now also psychical) transfer or transmission (Peters, 1999: 8). The third implies a sense of exchange, that is, “interchange, mutuality, and some kind of reciprocity” (Peters, 1999: 8). This exchange can be considered successful on a variety of levels, such as through simple delivery, a sense of intimacy and disclosure, or even the meeting of minds. Finally, communication can serve as “a blanket term for the various modes of symbolic interaction” (Peters, 1999: 9). Any theorization of the term ‘communication’ is therefore fraught with complexity, rendering necessary a clear position on what exactly is meant by *communication practice* in a NoE. Taking a cue from these various historical resonances of the term, we can conceptualise the elements of professional communication as comprising of activities aimed at:

- Fostering *connections and links* between diverse actors
- Achieving the *transmission or transfer* of ideas or matter
- Facilitating the reciprocal *exchange and flow* of information
- Creating the environment for *symbolic interaction*.

It is only in the second sense of communication that we see a unidirectional flow; in all the other senses multidirectionality, reciprocity and relational webs are implied. In the context of a digital ecosystem, then, with its emergent, complex and non-hierarchical qualities, it becomes crucial to incorporate all these aspects of the idea of communication. Furthermore, for the purposes of this paper, it is helpful to characterize the *unidirectional model of communication as dissemination* (particularly when it is aimed at achieving goals related to external actors and the general public), and retain the more complex, layered and multiple notions for referring to communication more broadly, especially in terms of *the type of community interaction* required by a NoE, and aimed at achieving goals relating to internal growth, dialogue and community building.

### *On Dialogue and Dissemination*

Peters famously distinguishes between “dialogue” and “dissemination” in his historical treatment of communication as an idea. To illustrate the fundamental differences between these two conceptualisations of communication, he invokes the teachings of two “central figures in the moral life of the western world”, Socrates and Jesus (Peters, 1999: 35). The great Greek philosopher Socrates believed dialogue to be the preferred human state of communication, where each actor contributes equally to the conversation and “reciprocity and interaction” (Peters, 1999: 33) are central to this exchange. As a result, a commonsense view of communication as really only occurring in face-to-face environments has retained force to this day (Peters, 1999: 43).

Jesus as a model of communication, on the other hand, did not require two or more committed and equal actors to engage in reciprocal interaction. Instead, Jesus broadcast his message indiscriminately (Peters, 1999: 46), to any and all who would listen, regardless of reciprocity and interaction on the part of his messages’ recipients and whether the seeds of that message were sown on fertile or barren soil. Jesus’s “one way communiqués” (Peters, 1999: 33), then, were more about the *message* than about either the *sender or receiver*. In turn, the roots of the term ‘dissemination’, which relate precisely to the sowing of seeds (Peters, 2005: 212), can be interpreted in modern parlance as the ‘sowing of information’ without a deliberative regard to the



audience necessary for that communication to take place. In this way, and in contrast to the Socratic model of communication, dissemination is an open-ended and indirectly interactive process of conveyance.

Thus dialogue and dissemination can be conceptualised as having different emphases on senders and receivers: the former focused on a conveyor as the source of communication and the receiver as an incidental or mass audience; the latter on a known and committed recipient with an increased capacity to perceive and interpret the message of the conveyor (see, for instance, Hall, 1980; Silverstone, 1988). Some arguments in communication-related theory and research (for example, critics of the Frankfurt School such as Lukács, Popper and Eco) have resisted the dissemination model, holding that it dehumanizes, homogenizes and anonymises audiences. But it would be over-simplistic to dismiss dissemination altogether on this basis. Peters argues that *communication as dissemination* is a useful model in contexts such as education, where a lecturing format achieves certain necessary ends, even though “cascades of words” can often go with little result. Dissemination is also central, of course, to the practice of communications as a form of public relations: the projection of an image or information to the general public, or the offering of information (such as research outputs or marketable commodities) to the widest possible and anonymous audience. Dissemination is also useful for considering the problem of “the deprivation of presence”, which in modern times is often the starting point of reflection about communication (Peters, 1999: 36). If dialogue is defined “as the sharing of being and time” (Peters, 2005: 212), for instance, how can we communicate when time and space are not contemporaneous? Such a question is central to the philosophical and practical concerns of digital ecosystems, where a ‘traditional’ temporal and spatial pairing is intentionally disbanded in order to increase communicative, and also disseminative, potentials over and between a large and diverse body of people, firms, and public institutions.

Peters quite correctly and eloquently summarizes many similar questions that arise from reflecting upon communication. Namely, he posits, “given our condition as mortals, communication remains not primarily a problem of technology, but also of power, ethics and art” (Peters, 1999: 268). In order to conceptualise how communication as a practice can be realised within a NoE, it is useful to reflect briefly on these four ontological paradigms: **technology, power, ethics and art**. In turn, these can be related with the seven traditions of communication theory outlined by Robert T. Craig (1999): the **rhetorical, semiotic, phenomenological, cybernetic, sociopsychological, sociocultural and critical perspectives**, to which this discussion turns next.

### *Communication as a Problem of Technology*

From the perspective of technology, communication is conceptualized as information processing. Craig (1999: 141) terms this the *cybernetic* tradition. Concerned with the functioning of *communication as a system*, this approach emphasizes the complexities and subtleties of communicative structure, and deemphasises individual experience, “collapsing agency into underlying or overarching symbol-processing systems” (Craig, 1999: 142). This view on communication is particularly notable in the work of Niklas Luhmann. His definition of communication as “the synthesis of information, utterance and understanding” (2006: 47), and his conceptualisation of the opposition between communication and non-communication as the basis of social systems theory, are rooted in an operational logic that seeks to provide an explanatory model for the overarching structures of social interaction. Although he does not directly concern himself with communications technologies themselves, he sees communication in technological terms, and addresses the mechanics of its operations on a meta-theoretical level. Although he has been criticised for his lack of attention to agency, it is exactly the cybernetic concern with an analysis of how communication as a system operates that distinguishes Luhmann’s body of thought.

But theorising communication as technology invokes other, more material considerations too. In the context of a DE, the technology we are collaboratively developing in order to provide a community with effective communication tools, namely OPAALS’ Open Knowledge Space (OKS),

is key to existing and future communication activity. Technology, then, is crucial to the communicative systems conceived, developed and put into place in order to facilitate many levels of exchange, dialogue and dissemination, and in many ways informs other aspects of communication that also require contextualisation. As such, it makes possible communicating our research to a body of participants and recipients *wider* than the NoE itself, and can be conceived of as enabling the *metalanguage of all communication activities*, but with an emphasis on the activities of the immediate research community concerned. With an acknowledgment that unknown research has no way of benefiting society, as well as an understanding that the cybernetic dimension of communication facilitates this by folding human agency into symbol-processing systems, technology is a primary mechanism for allowing unknown research to come to light.

### *Communication as a Problem of Power*

Theorised from the perspective of power, communication can be understood as a practice that inevitably influences social and political relationships and structures. Thus both the *critical* and *sociopsychological* paradigms can be related to a framing of the problem of communication in terms of power.

In the critical tradition (Craig, 1999: 147), communicative acts are regarded with a degree of suspicion, in that they contain an inherent purpose “towards articulating, questioning, and transcending presuppositions that are judged to be untrue, dishonest, or unjust”. In other words, communication requires a process of “discursive reflection” that is in some way emancipatory. A critical approach to communication makes assumptions about the ways in which power has been employed in creating that communication, and challenges normative assumptions that may be weaved into communicative practice. It is essentially analytical, and seeks to address existing communications and reveal the true, underlying motivations. In this way, communication can be seen as both manipulative and empowering: in the former sense, the ways in which communicative messages are not what they may appear to be; in the latter sense, the ways in which “dialectical questioning can unmask those conditions” (Craig, 1999: 148).

A sociopsychological paradigm also addresses how communication is framed by power, theorising it as “a process of expression, interaction and influence” (Craig, 1999: 143). Focusing on micro-levels of inter-human interactions, then, rather than a macro-level of societal interaction implied by the critical paradigm, the sociopsychological view argues that communication is mediated by “psychological predispositions ... as modified by the emergent effects of social interaction” (Craig, 1999: 143). In this way, communication practice is about the power relationships that exist between individual communicators, as well as how their sociopsychological compositions influences the ways in which they express themselves, interact with others, and are able to manipulate the beliefs and communications of others.

Considered as a problem of power, communication practice thus raises questions about how the individual actors that populate a community interact in terms of relations of power. More specifically, it is concerned with the motivations of communication: who has the mandate and power to speak and on what terms; levels of trust in how communication occurs and what is communicated; and finally, the levels of transparency involved in forming belief, opinion and motivation. From micro-processes of individual interaction to broader macro-process of how a community governs itself *and* communicates those governing procedures, we can see that questions of power are inextricably woven into the fabric of *all* communication practice, including that of DEs.

### *Communication as a Problem of Ethics*

Theorised from an ethical perspective, communication can be understood as a practice that seeks authenticity and truth, as well as one that seeks to contribute to the construction of a fair and just social order. These can be related to Craig’s *phenomenological* and *sociocultural* paradigms of communication theory.

The phenomenological tradition frames communication in terms of dialogue or the fundamentally human experience of 'otherness'. This perspective accentuates the "interplay of identity and difference in authentic human relationships and cultivates communication practices that enable and sustain authentic relationships" (Craig, 1999: 138). By understanding the formation of experience through direct contact with others, the phenomenological tradition sees unmediated dialogue as an ethically preferable mode of communication, in which both parties are fully present, aware of their own embodied experiences, and deeply respectful of the equality of the other person's experiences. Considered from a fundamentally humanist perspective, communication in this paradigm requires that all communicators treat one another as persons, not things (Craig, 1999: 139). In this sense, the fundamental concern is with the *ethics of communicative acts*.

The sociocultural paradigm, on the other hand, sees communication as the primary means through which social order is produced and reproduced. Rooted in traditions of sociology and anthropology, this view on communication defines it as a symbolic process that produces shared patterns of understanding (Craig, 1999: 144). These shared patterns are often culturally unique and historically based such that where gaps in time or space exist, communication problems may occur (Craig, 1999: 145). From an ethical perspective, then, seeing communication socioculturally requires an acceptance of its commonality, as well as assumptions about the ways in which it can reproduce shared values.

Considered as a problem of ethics, conceptualising communication requires an innate and constant inclusion of the concerns of the other, whether this is a member of a shared community or partner in communicative exchange. It is also based on the acknowledgement that communication is something collective, shared and community-driven; that communication can impact upon both the greater good of society and an individual's capacity to reach his or her fullest human potential. When harnessed to such ethical motivations, communication practice becomes central to the kind of community building that a NoE requires. As Peters (1999: 10) quite fittingly summarises:

... communication theory becomes consubstantial with ethics, political philosophy, and social theory in its concern for relations between self and other, self and self, and closeness and distance in social organization.

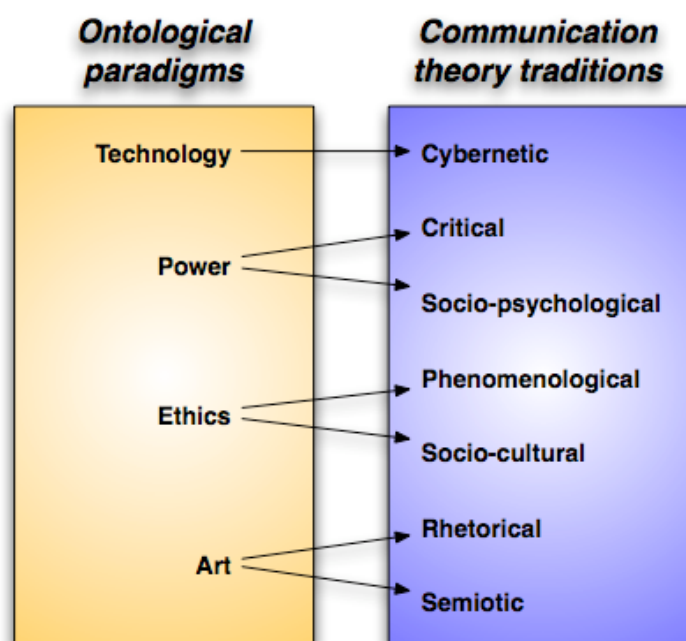
### *Communication as a Problem of Art*

Theorised as a problem of art, communication can be understood as a symbolic and aesthetic practice, summed up by the *rhetorical* and *semiotic* traditions of communication.

As synthesised by Craig (1999: 135), the rhetorical paradigm sees communication as a *practical art of discourse*, that is, the ability to frame ideas and arguments in a convincing, appealing and sophisticated manner. And while this statement of best practices is not aimed at providing a comprehensive view of the rhetorical dimensions of communication, it can be generally argued that rhetoric is aimed at persuasion: at converting the listener or audience to the viewpoints or ideas expressed (see also Arnold, 1989: 461 – 465; Silverstone, 1999: 31 – 39; Silverstone, 2007: 20 – 34). From a broad perspective, then, considering communication as rhetoric can assist the practitioner in not only creatively crafting his or her message to appeal most effectively to the intended recipients, but also in effectively deciphering and assessing the communications of others.

The semiotic paradigm defines communication in terms of the study of signs. The many denotative and connotative meanings of signs become a matter of decoding, recasting society as a system in which meanings flow from sender to receiver through signs. This renders meanings "public and ultimately indeterminate" and therefore understanding a "practical gesture" (Craig, 1999: 137). Signs can encompass the textual and the visual, the verbal and the non-verbal, allowing for a vast set of potential meaning-making tools for the professional communicator.

Considered as a problem of art, the ontological paradigms of rhetorical and semiotic traditions contribute a great deal to the types of messages that are communicated in dissemination style, as do technology, power, and ethics to their respective traditions (see Figure 1, below). In the context of communication of knowledge and/or research, Tufte's (1997, 2006) approach to the visual representation of evidence and the design of visual information are particularly instructive. Without doubt, it is best practice for aesthetic concerns to positively affect the representation of complex research concepts and, therefore, their effective communication. The careful crafting of messages via multiple modes (visual, verbal, aural, textural, etc.) is the central concern of many professional media-makers, and indeed is a research focus of OPAALS itself: the visualisation tasks in WP10 are illustrative of the importance attached to the aesthetic imperative of communication<sup>2</sup>. In the context of a NoE, however, the artistic concerns of communication are employed in the projects of community-widening, public relations and research-findings dissemination as well. Therefore, whether used more explicitly to frame the 'look-and-feel' of a computer interface and the design of documents or reports, or, more implicitly, the mode of delivery of presentations and general information, the artistic concerns of communication should not be overlooked in terms of the service such approaches provide to effective communication.



**Figure 1: Relevance of different communication theory traditions to some of the OPAALS ontological paradigms<sup>3</sup>.**

### *Conclusion*

This portion of the document has aimed to map-out some core theoretical issues that exist within the field of communication theory, and to articulate those within the context of the communications goals of a DE NoE. It has outlined the various levels of meaning attached to the terms communication and dissemination, and has explored the difference between dialogic and disseminative viewpoints on the former. It has also explored the various paradigms that inform communication theory in the context of four meta-themes – technology, power, ethics and art – and briefly suggested how each of these paradigms can add value to the communications and dissemination strategy of a NoE. With this framework in place, it is now possible to move into a

<sup>2</sup> For a lengthier discussion of the aesthetic implications of communication, particularly as they overlay technological considerations, see D10.6 'A proof-of-concept implementation of a visualisation client'; for consideration of the aesthetic implications for socio-economic constructivism and language, see the forthcoming D6.7.

<sup>3</sup> By "paradigm" we are referring to Thomas Kuhn's (1996) meaning, which can be loosely defined as "a body of theory combined with a set of methodologies and a community of practice".

more detailed discussion of these strategies, which have resulted from the research and practice of OPAALS.

## Communication in Practice

The purpose of this next section, Communications in Practice, is to illustrate how the conceptualisations of communication, above, have been put into practice within a NoE. More specifically, this section seeks to interrogate the theoretical parameters of, and further define the symbiotic relation between, communication *and* dissemination, thus demonstrating how the meta-themes of technology, power, ethics and art have been considered, put into practice, and redefined within the OPAALS community.

### *Internal Communication*

A major challenge for a multidisciplinary group is reconciling the ways in which its members assume the use of a language in tight accord with the specifics of their discipline. As the OPAALS NoE seeks to converge the disciplinary interests of the social, biological/physical, and computer sciences, including these disciplines' language specifications, this challenge could be interpreted to reflect *communication as a problem of technology*, *communication as a problem of art*, as well as *communication as a problem of ethics*. With terms that are unique to any of these disciplines, but generally understandable, this could be resolved by a basic familiarity with the language of that discipline. However, even with basic familiarity, language has different implications for different disciplinary interests. For instance, computer scientists may collaborate with social scientists on 'use cases'. In software design, this refers to a very specific and structured input, usually associated with the language of UML. To social scientists, use cases invoke observed and recorded phenomena, and so draw on instances from larger cultures and societies that differ from, say, the steps involved in establishing a transactional flow. Nevertheless, and in spite of how easily internal communication might seem to break down in this situation, it is simply a matter of translating between an *empirical examination of the social world* and an *empirical understanding of the business or non-technical world*. In either case, and in the ethical sense, the objective is to comprehend the experience of others.

By recognising here more explicit implications of communication as problems of technology and art, however, as well as more implicit implications of power and ethics, a breakdown such as this has been undertaken. We have, as a start, created the Joint OPAALS Index and Encyclopaedia (JOIE) of NoE words and terms, culled from the social, biological *and* computer science domains<sup>4</sup>. The technological, rhetorical or semiotic associations with the terms are evident, particularly depending on the proximity of the term to the discipline with which it is most concerned. But issues of power or ethics that come into play when a failure in communication occurs, particularly across disciplinary understandings or interests, is mitigated through the creation of a *common, cross-disciplinary language*. As our network seeks both transparency and reflexivity in its internal communication practices, however, an evident challenge is seeking and realising continuous revisit, contribution and revision of the terms contained in JOIE<sup>5</sup>.

Furthermore, we strive to communicate our work to each other. Thus far, the most effective means of doing this has been to condense all research work and publications into abstracts that are then listed by year, disciplinary group or workflow (here, combinations of tasks and/or Work Packages),

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<sup>4</sup> See <http://wiki.opaals.org/JOIE>

<sup>5</sup> At the same time, it is worth considering the contributions of D6.1: 'Studies/papers on discourse organisation of epistemic cultures: theoretical and methodological analyses and practical interpolation', and D6.3: 'Metaphorological Tool Kit'. The former deals with communication processes in terms of the organisation of discourse, as well as communities and knowledge in terms of epistemic cultures; the latter examines how metaphors play a central role in OPAALS and DEs in terms of representing specific linguistic forms and how this shapes our perceptions and interactions in daily life.

title and authors<sup>6</sup>. Currently underway as well is the creation of Deliverable Dependency Diagrams (DDD's), which map-out both strong and weak links between the existing research deliverables of *all* Work Packages and partners, indicate how these relations cumulatively fit together, and anticipate future research and OKS implementation plans<sup>7</sup>. Like the NoE lexicon, an attempt is made here to revisit and update these at least occasionally, as well as to make them available to the entire community. Thus, while the discourses of power and ethics that are associated with a public, centralised repository of multi-disciplinary work still exist, both technology and art allow for equal access, unrestricted additions or revisions, and self-regulating organisation over the P2P OKS infrastructure that is in the process of being implemented.

There are further lessons on internal communication to be learned from other, more organic processes that have evolved from our work in a NoE. We have experienced success with the need for group-chats concerned with aspects of OKS development (for instance, the Semantics of Business Vocabulary and Business Rules (SBVR), the details of which are available on the OPAALS wiki<sup>8</sup>). Additionally, we have established an email list dedicated to jump-starting discussions about P2P-infrastructure issues, which contributed significantly to recent decisions made in technical architecture workshops. Also valuable was an exercise in switching perspectives during the 2008 OPAALS Summer School in Limerick, Ireland, in which candidates from both social and computer sciences presented the work of 'the other' in order to both comprehend an alternate body of knowledge and convey that knowledge to their like-minded peers. Furthermore, exchanges on various topics (for instance, how 'identity' strongly pertains to both social and computer science domains, with very different, yet overlapping, implications for research) during OPAALS General Meeting sessions, informal sidebars and social activities have been enormously productive. As such, the value of spontaneous exchange, facilitated by a more formal infrastructure that we all operate and work to maintain, is perhaps the most significant conduit of successful internal communication.

Finally, our 'Collection of Mini-Project Reports from Year-Two Research Exchange Experiences' has important implications for internal communication. These reports cull the experiences of NoE members who have conducted research at different partner institutes during the first two years of the OPAALS project. Its contents and the participating members are as follows:

- Overview of SBVR: an exchange between NAICA (as a BCU subcontractor) and LSE
- Business and Biology: an exchange between NAICA (as a T6 subcontractor) and LSE
- A Framework for Digital Ecosystems: the 'First' of Theoretical Interpolations: an exchange between UniKassel and LSE
- Open Innovation and Inner Sources: an exchange between UL and LSE
- Usability of the OKS Desktop: an exchange between LSE and TechIdeas
- Knowledge Services and OKS: an exchange between SUAS and TechIdeas

However, with a *more expansive* degree of internal communication, this kind of collaboration can enhance the network itself, not just the members participating in exchanges. Accordingly, we look to expand internal communication with the results of the first-ever exchange programme between European and Brazilian partners: the Salzburg University of Applied Sciences and the Instituto de Pesquisas em Tecnologia e Inovação.

### *External Communication*

While our communication efforts have, for the most part, been focused internally – strengthening the NoE itself through communication strategies that not only *employ*, but also *are conscious of* the technological, political, ethical and aesthetic dimensions of that communication – we also have

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<sup>6</sup> See <http://wiki.opaals.org/DeliverableAbstracts>

<sup>7</sup> See Appendices 1 – 3 for representation of deliverable dependencies for WPs 2, 6 and 9.

<sup>8</sup> See [http://wiki.opaals.org/WP2\\_Automatic\\_Code\\_Generation\\_From\\_Models/Language\\_and\\_Models](http://wiki.opaals.org/WP2_Automatic_Code_Generation_From_Models/Language_and_Models)

worked to establish and strengthen the practical side of external communications along these same theoretical lines.

Our approach, which employs, but at the same time is conscious of, the unilateral recipient at the receiving end of the metaphorical 'Jesus-as-disseminator' model, is more cautious. In external communication, experience has demonstrated that there is even less understanding of *what is a network of excellence*, much less a *digital ecosystem*, than we have been able to achieve internally, amongst each other, within the network itself. Like internal communication, then, sensitivity to the ethical and political dimensions of communication is necessary; the difference here being that in external communication the ethical and political elements become explicit, while the technological and aesthetic ones become more implicit.

To illustrate this transposition of communicational meta-themes, it was ascertained early on, during initial Digital Business Ecosystems (DBE) research, development and communication strategy, that the target audiences of European small-to-medium enterprises (SMEs) met the notion of a sustainable, self-evolving and self-regulating digital network with scepticism, if not incomprehension or disinterest (see the section Use of Regional Intermediaries, below). In other words, the above notion of unmediated dialogue as an ethically preferable mode of communication, though ideal, could manifest itself in a sense of otherness attached to, and thus serving as a divide between, the theoretical interests of a research network and the practical interests of business owners or entrepreneurs. More so, the political or power dynamics associated with these communicative endeavours were complicated by the above sociopsychological tradition of direct expression, interaction and influence. Instead of the SMEs engaging in a dialectical questioning of their conditions of unknowing, they interpreted the communicative message of DBE research as being other than what it simply appeared to be. There was a gap, in other words, between the interests of academics and businesspeople, as well as how these interests were expressed and understood, that could have been mediated by a greater sociopsychological understanding of the mere fact that difference can breed distrust.

As a redress, then, we began to incorporate the communicational strategies and knowledge bases of resources *invested in* development of the OKS, yet in a certain regard *sympathetically aligned with* the interests of SMEs. Maintaining the same sociopsychological principles of micro-level human interactions mediated by the effects of social interaction, we have found that engaging Regional Catalysts and Driver SMEs (see the same section, below) has proven more fruitful than going directly to our understood target audiences. That is, by seeking the support and resources of academics and businesspeople independent of our NoE – but with concerns that overlap with and objectives that are similar to their own existing communities – problems of the ethics and politics of communication are alleviated by incorporating the technological and aesthetic 'know-how' of parallel individuals and groups. Finally, this is a strategy that is being extended to similarly invested yet independent entities throughout the participating regions of the NoE.

### *An Open Knowledge Space*

It is essential for a group that is dispersed not only by geography but also by disciplinary interests to have a common space in which thinking, working, communicating, collaborating and producing can take place. Within OPAALS, this is envisaged as the Open Knowledge Space (OKS). The OKS is the aspect of the OPAALS project that effectively ties together our combined disciplinary efforts and merges the dimensions of the problems of communication discussed so far: it is a multi-functional and multi-technological workspace, as mentioned, enjoining human agency with the language- and symbol-processing of cybernetic traditions; it is a repository of knowledge, and thus with that knowledge a vehicle for the community to negotiate attendant issues of power and ethics; and finally, it is a mechanism for engaging, through both rhetorical and semiotic devices, with existing members of the NoE, those considering joining it, as well as the public at large.

The issue, then, becomes how to implement something that addresses these divergent disciplinary needs *and* their attendant dimensions of communication. Given the number of variables

conceivable in terms of both of these factors, arriving at a common set of features, characteristics, or functions is perhaps as problematic as attempting to agree upon a favourite type of food, style of music or mode of dress among a large group of people. This proves particularly the case since there is a potential for computer scientists in the NoE to advocate preferred and known tools (based on specific academic and industrial considerations) rather than weigh the consensus of network at large, much of which is not intimately familiar with these specific considerations. On the biological sciences' side of interest, there is also a potential to collapse agency into underlying or overarching symbol-processing systems, thereby circumventing concerns such as the subjectivity of the rhetorical or semiotic dimensions of communication that form part of the balance the NoE attempts to strike.

Thus we have determined that it is possible to be neither totally objective nor subjective when factoring meta-thematic, discipline-based, communicational needs of our network such as these. This is even more the case as, on the one hand, technological systems and software development can be more or less inward-focussed in terms of the ways in which applications or processes develop; and, on the other hand, social research can be more or less outward-looking in terms of the ways in which people engage with existing or evolving systems, engage with each other via those systems, or effect change on those systems through subjective forces like human agency. As such, practically-oriented best practices of communication mediate between these inward- or outward-looking tendencies and seek a formal commitment *from the group as a whole* to the primary functions of the OKS; functions that transcend either the desire to use 'the latest system', or to defer judgement of that system to matters of behaviour, preference, values and so forth.

Thus, and based on DBE experience, the OKS project is committed to Open Source technological solutions. These must be Free Open Source Solutions (FOSS), which we see as necessarily focussing the range of technological options, perhaps even slowing OKS development itself by virtue of the limited range of options, but nevertheless reflecting a parallel commitment to the social world and its concern with behaviour, preference, values, or other matters of human agency that FOSS technology enhances, not hinders. The OPAALS Web Site, then, is an interim solution: one which provides a static overview of the network's activities and contributions, and which references current development of OKS functionality, including email, wiki, blogging and instant-messaging. Another crucial component of the OKS, however, will be a 'Cooperative Article Publication System', a tool allowing joint authoring and reviewing of papers and articles and whose specifications will be designed, developed and ultimately tested by network members themselves, regardless of disciplinary interests or orientations<sup>9</sup>.

### *Familiarisation, Training and Support*

By familiarisation, training and support, this section looks at previous incarnations of the OKS as opportunities for learning about how the space will ultimately develop, as well as how these processes of developing the OKS are reflective of the NoE itself. Previous incarnations of the OKS entailed a wiki, forums, blogs, and the OKS Desktop; currently, many of these components are entailed in the decision whether to move forward with the Guigoh or Sironta applications, which will be discussed summarily.

A major learning from earlier incarnations of an OKS was that its users were provided with insufficient familiarisation, training and support. There was an assumption, particularly among computer scientists, that users would quickly come to understand the system and its many components by simply playing with them. In retrospect, there were at least two visible and interconnected factors at work here:

- Computer scientists do not necessarily account for the non-technical backgrounds or orientations of social or natural scientists; and thus:

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<sup>9</sup> The forthcoming D9.8: 'Article publication system specification' will provide a greater discussion of the implementation and potentialities of this tool.



- There is a tendency to underestimate the importance of familiarisation and training, regardless of assumed levels of proficiency, familiarity, or literacy with a given system

This second factor was manifest among administrators in the case of an on-line technology transfer network (UK Knowledge Transfer Networks programme, 2003 onwards). Administrators who had received extensive familiarisation and training did not properly take into account the role this training had played in their ability to use the system intuitively. Instead, these initial administrators would often tell their successors that the system was 'easy' and that the latter would soon 'pick it up'. This often left new administrators with knowledge gaps, the inability to select for themselves the appropriate tools of assistance, or a reliance solely on the support helpdesk for resolution, instead of taking in-hand the issues themselves.

In the case of these disparate, earlier components of the OKS, this phenomenon was experienced as its creators and administrators *were* willing to help end users, but support was on such an informal level that it was not tangibly beneficial to some of those same end-users. Complicating matters further, two independent partners were involved in familiarisation, training and support, and so two separate contacts were established according to the application involved in, as well as the nature of, the issue. Thus dependent on the issue, users who did not receive proper support gave up on the system altogether and reverted to more standard, basic or devolutionary means of communication, such as telephone or email, instead of seeking support from the other partner or conjoining support of the two.

In these instances, it is readily seen how the communicational meta-themes of technology, power, ethics and art come into play; yet how in conceptualising not only their presence but also their convergence, communicational problems surrounding familiarisation, training and support can be resolved. One recommendation to be made is that familiarisation, training and support should not to be placed in the purview of a select group and therefore, the power and artistry attendant to that knowledge should not be seen as a limited commodity. If such a situation exists, as it often does, the dynamics of power are skewed in favour of the few that possess that limited (but more widely sought-after) base of knowledge. Following this, the process of making available that knowledge is left to the (arbitrary) pedagogical artistry of the possessor of the information called-upon. And finally, the ethics (and thus the art) of exchange between the supplier and recipient of that knowledge may become entangled in issues of dependency, urgency, literacy, and the like.

From this experience, another major learning is that in general there is a low threshold of effort that users will put forth toward making new and unfamiliar technological systems work for them, especially when confronted with the decision to use one application over another, similar one. Although later incarnations of the OKS were increasingly intuitive and user-friendly (from disparate applications to the OKS desktop, for instance), there is now, nevertheless, a common understanding that fundamental aspects of the OKS (such as its data structure: where information exists, and what tools can access it) need *explicit, consistent, consolidated and documented information* to pertain to them. However, even if we assume a common infrastructure with such information clearly documented, we still have to contend with fundamental user-level (social and technological) issues, relevant to the applications Sirona and Guigoh in particular, but to any other application currently in consideration as part of the overall environment. As far as communication in practice, then, it is pertinent and useful to continue working towards the idea of *coexistence* within the project. In other words, at one level there is the matter of choosing one application over another (Guigoh over Sirona, or vice versa) for ultimate integration with the OKS. On another level, this choice is not foisted on OPAALS partners, but rather is something that partners will develop at will, as long as this development coincides with a common infrastructure, and in agreement with the principles of openness which underscore the very OPAALS project itself. This, while not an easy situation to decipher, is rendered more interpretable by relating it to the problems of power and ethics, as it attempts to mediate the discourses attendant to them by rationalising coexistence as a guiding principle of the openness of the project. While something this Work Package is continuously seeking to provide the rest of the NoE community, it is nevertheless done with these dimensions of the problematics of communication in mind.

### *OPAALS Community Enlargement*

Finally, as part of the activity to expand the OPAALS community within *and* outside of Europe, and based on a dissemination model of creating initial regional contacts (see the section Use of Region Intermediaries, below), we aim to establish subsequent local growth and at the same time compensate for overall NoE funding constraints.

Thus, throughout the NoE, Regional Catalysts (RCs) have been established through local actors in the form of agents at research centres or universities<sup>10</sup>, which in turn form local networks of independent and alternative funding strategies and sources. These new RC/local network alliances then participate in OKS development, growth and sustainability, leveraging their OPAALS associations for additional funding. This has resulted in a benefit to the overall project, as well as the community, through case studies of regional and sustainable approaches, methodologies and open-source technologies.

## **Dissemination in Practice**

Dissemination in practice is roughly based on the aforementioned distinction between dissemination, the transmission or transfer of ideas or matter, and communication, the reciprocal exchange and flow of information through the creation of an environment for symbolic interaction. In other words, dissemination in the practical sense focuses more on a unidirectional flow of communication as it is aimed at achieving goals related to external actors and the general public. However, and as we hope to illustrate, although these conceptual distinctions are useful, the theoretical lines between dissemination and communication are often blurred *in practice*. This will become clearer in the following discussion by reference to practical aspects of OPAALS NoE dissemination.

### *Brand Identity and Dissemination Materials*

We understand brand identity as the management of the public personification of a private entity<sup>11</sup>. This transmission of ideas from the private to the public realm is crucial to tangible representation of the intangibility of a certain culture, its values, and identity: a process manifest in the creation and projection of entities such as logos, taglines, or other public-facing, easily identifiable material. As the OPAALS NoE is ever expanding, we are in the process of creating and projecting a stable and coherent identity. Much like OKS requirements and functionality, or even external communication practices, then, we have taken a conservative approach and have factored both the 'objective' and 'subjective' perspectives of our community members, as well as the interests that we find traditionally attendant to their disciplines. Therefore, we have attempted to avoid the risks associated with creating an identity that is either overly-subjective and thus lacking in the capacity to reflect the larger character of the entire network itself, or that is too objective and thus devoid of any of the idiosyncrasies of that same, larger sense of character.

Additionally, for the sake of consistency – another important principle in creating and projecting a public identity – we have appropriated elements from DBE-project branding in order to provide a sense of continuity to the look-and-feel of visual materials. As mentioned, this serves the purposes of reflecting continuity and stability to the outside world, but at the same time endows the NoE

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<sup>10</sup> RCs that were involved in the DBE project *and* that have worked on the OPAALS project are Instituto Tecnológico de Aragon (Spain), University of Central England (UK), Create-Net (Italy), and Indian Institute of Technology Kanpur (India); Tampere University of Technology (Finland) provided an RC during the DBE project, although on the OPAALS project this is now a different institution.

<sup>11</sup> See Deliverable 9.7, "Branding as group identity development: A bottom up approach for Digital Ecosystems" for a much greater discussion of brand identity in a NoE.

itself, or the inside world, with a parallel and commensurate sense of progression and solidity.

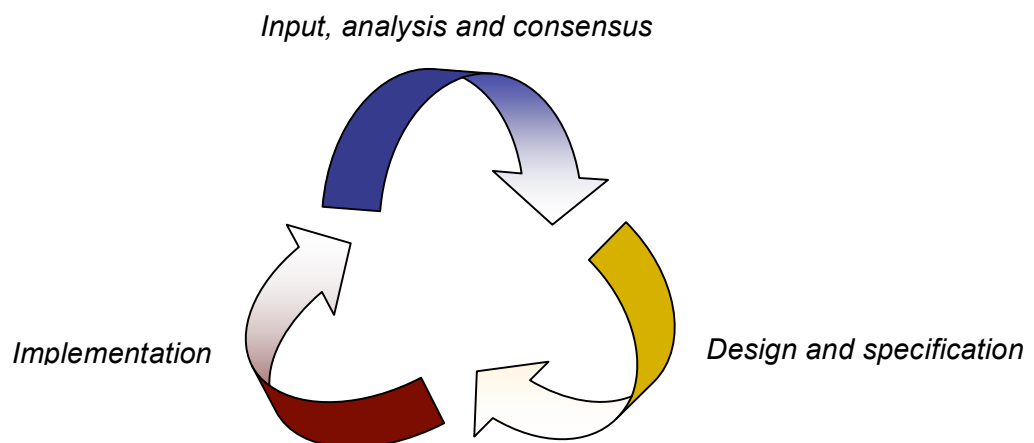
The OPAALS logo, for instance, has changed from earlier incarnations of DBE identity, yet retains the same organic/synthetic visual principles that underscore the divergent disciplinary interests of the project *and* ties-together the transformative and evolutionary traits associated with a butterfly, as in Figure 2, below.



**Figure 2: OPAALS logo.**

As such, OPAALS brand identity needs to be conceived more broadly in terms of the always-developing work of the NoE's various and individual members. In other words, this is a project to integrate cross-disciplinary, individual processes of designing, conducting, writing and (attempts at) disseminating overall DE research with common sets of values and objectives shared by broader aspects of the OPAALS community. We believe that by integrating these internal motivations and external values/objectives, the intricacies of establishing a brand identity become manifest within the NoE itself, as well as exemplary for other emerging networks and dispersed multidisciplinary research entities.

Finally, our collective identity needs to serve as mechanism of engagement for these same emerging NoEs or research entities. Our brand identity, then, also defines what constitutes being and becoming part of a NoE. It has the potential to orient other networks towards finding and becoming familiar with their own internal motivations and their external values/objectives. An ongoing task is thus simultaneous management of collective identity as a reflection of OPAALS outward image and a refraction of the network's inward self-conceptualisation. We have achieved this by re-articulating our accomplishments and drawbacks; by identifying both our gains and losses, which allow for a self-examination of constantly emerging aspects of our collective culture, values, and identity. This is an *iterative* process, then, which is key to the evolution of OPAALS brand identity, as it parallels the evolution of the research produced within the NoE itself. This process is illustrated by Figure 3, below:



**Figure 3: Iterative development of OPAALS brand identity.**

The 'input, analysis and consensus' stage moves to 'design and specification', which, upon 'implementation', requires a return to the first stage in order to effectively re-assess the development of our collective identity. In more concrete terms, initial branding, apart from the logo above, has involved the production of materials that support the dissemination of OPAALS activities and results, including brochures, folders and posters, as well as content produced for specifically targeted entities. Thus, during the first year of the project, the network 'personality' was allowed to naturally emerge. In the second year of the project, we began revisiting the first stages of the identity-building process in anticipation of a third-year launch of a fully developed OPAALS brand identity, truly reflective of the increased maturity and stability of the NoE itself.

### *Use of Regional Catalysts*

A significant factor that will underpin the adoption of both OPAALS philosophy and a DBE environment is the involvement of regionally based, intermediary organisations as dissemination catalysts. As discussed previously, the introduction of Regional Catalysts (RCs) was based on the realisation of difficulties faced – in physical terms and in terms of a common language and working space – in directing their work back to the benefit of the academic community. OECD figures show that the European SME community is vast, approaching 20 million enterprises within the 27 EU member states. Simply finding and contacting relevant enterprises is a daunting task. Moreover, most SMEs have little interest in the abstract and protracted nature of research language. They had much greater and obvious interest in tangible, short-term gains. Thus, initial attempts at the regional level to present to SMEs not only the benefits of a DE, but also *the concept of a DE*, ended up being a fairly futile exercise. As mentioned, the SME and research communities operated on entirely different wavelengths.

Despite these challenges, the idea of RCs put forward and developed during DBE work has continued with OPAALS. RCs serve as mediators or intermediaries and are brought into the NoE with the purpose of linking researchers with the ultimate, local end-users of their research products. With a persistent belief in their benefit to the process of research dissemination, RCs have thus demonstrated several clear advantages, namely:

- RCs already know, have already established relationships with, and in some cases fund SMEs in their areas, and so are able to engage in direct dialogue
- Direct dialogue reflects the Socratic mode of communication, but is enhanced by reciprocity and increased interactivity, which result from the use of an accepted business language
- RCs thus convey the concept *and* benefits of a DE on a generally understood level, further encouraged by the context of face-to-face contact and the local environment
- Finally, RCs can provide first-hand knowledge that translates into a localised response to concerns with technical infrastructure, deployment, finance, etc.

Thus the advantages of RCs to the disseminative processes of DE research cannot be overemphasised. While RCs may differ greatly in terms of the types of organisations with which they are associated or their roles in their respective regions, they nevertheless have the common vision and objective of creating and sustaining regional development through information and communication technologies (ICTs). Additionally, RCs are sufficiently close to their regions' SMEs to maintain consistent contact and influence. At the same time, they possess a sophisticated knowledge of regional policy and oversight measures to be able to quickly and effectively engage with new technology, even at a nascent and conceptual stage. Indeed, some RCs have contributed to aspects of the research itself, and continue to do so. The boundaries between researchers and end-users are therefore permeable, as are traditional divides between academia and industry.

### *Driver SMEs*

In disseminating the concept and benefits of a DE, another valuable regional intermediary between the researcher and end-user is a Driver SME.<sup>12</sup> This entity can be described as an existing software development enterprise or ICT provider that already has SMEs as regional clients and thus serves as a primary contact for those SMEs' technological or infrastructural needs. In a metaphorical sense, then, these Driver SMEs operate with a much deeper understanding of the 'engine' propelling the DE than its 'passengers', or the individual and varied SMEs. Indeed, it may not even be necessary for the end-user to have an intimate knowledge of the workings of the DE in which they are participating, just as most operators of vehicles have a limited knowledge of how exactly they work. Here, again, the Socratic principle of communication is important, but in fact acts as a means of *disseminating* DE knowledge to SME clients based on existing and familiar relationships.

However, not all Driver SMEs are suitable disseminators, regardless of how or to what extent the DE itself is communicated to their existing clients. Only the more progressive and established Driver SMEs, it turns out, have both the means and the motivation to adopt and promote new technology. Again, this can be seen as related to the problems of communication – and the multiple combinations of technology, power, ethics and art entailed in them – between the research community, Driver SMEs and end-users, but an understanding of *dissemination through communication* that nevertheless has been, and continues to be, a valuable practical principle.

### *Events and Publications*

Another aspect of dissemination of OPAALS research concerns events and publications. These are considered together because OPAALS-related events, like publications, have come from *within* the NoE itself and therefore have been disseminated to a wider community through various channels or means. Some of those are discussed here, as well as how we foresee expanding our channels and means of dissemination to an even wider community.

The First OPAALS Conference was held 26-27 November 2007, in Rome, Italy. The event was widely attended by representatives of all OPAALS participating partners. Following the conference, the First OPAALS Conference Proceedings were produced, which culled research conducted during the first year of the project and which was presented at the conference. This material includes:

- Introduction
- Social Network Analysis of Dynamic Forum: “Conversê” Case Study
- More Notes on Abstract Algebra and Logic: Toward their Application to Cell Biology and Security
- An Efficient Algorithm for Conceptual Subspace Clustering
- An Examination of the Use of Inner Source in Multinational Corporations: A Preliminary Framework to Understand Inner Source Software Development
- An Evolutionary Framework for Language in a Digital Ecosystem
- A Business Model of a Digital Business Ecosystem Negotiation Platform
- Community Visualisations in Open Knowledge Space
- An Evolutionary Multidimensional Trust Model for Digital Ecosystems
- Peripheral Simulation Framework for Digital Ecosystems
- Ecosystem-Oriented Architectures
- Linguistic Dimensions of Terms: Towards Community's Common Vocabulary and Concepts
- Enabling Trust with a Distributed Accountability Model for Digital Ecosystems
- Declarative Service Composition with SBVR

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<sup>12</sup> The concepts and taxonomy of Driver, Implementer, Discoverer and User SMEs was introduced by Elmar Husmann of IBM during the DBE project. See, for example, DBE Deliverable 27.4, available at <http://files.opaals.org/DBE/deliverables/>

- Transaction Vectors: A Non-Interleaving Semantics for Long-Running Transactions
- Interpretation Logics
- Mediating the Dialectic Relations between Indigenous Knowledge and Identity: Lessons from DEAL Project
- Interface, Perception and Visualization
- The Impact of DEAL on Community Network: A Case Review
- The Agent-based Digital Business Ecosystem: Towards the Semantic Web
- Self-Organising Map-Based Tag Clouds: Recreating Spatially Meaningful Representations of Tagging Data
- Digital Ecosystems: Community Networks or Networked Communities?
- Community Currencies: A Critical Approach to Community Currency Systems
- A Framework for Digital Ecosystems: The 'First' of Theoretical Interpolations

In further disseminating this material, we are seeking to create additional links between the ideas and findings present, as well as between this material and future research. This process of expanding and refining dissemination could be approached from different angles, one being a *thematic approach*. For example, instead of a sequential dissemination of research material from the conference proceedings, it could be re-arranged and re-disseminated thematically, according to key words or phrases of equal importance to entities outside of OPAALS, but nevertheless deeply connected with our same principal research interests. The word 'community' appears five times in the titles of conference proceedings papers above. Community is indeed a major discourse across the social, computer and biological sciences and increasingly leads to speculation on how much the research here pertaining to community could be extracted and repurposed in a much more condensed, digestible and relevant form.

### *Newsletters*

Finally, in both DBE and OPAALS work, newsletters serve to disseminate the projects' activities, challenges and accomplishments. While the newsletter's primary purpose is to update project participants, it has also been conceived as a vehicle for reaching external readers as well as potential new members to the NoE itself. Newsletter content, then, is increasingly editorial in nature and attempts to provide a perspective not only from within the project but also from larger discourses and themes that concern it, like community, but also like language, space, etc.

The contents of the first edition of the OPAALS newsletter included:

- Virtual research space a reality
- Digital Ecosystems repository launched
- Mathematical symmetry the key to life's computer?
- Language is the key to interdisciplinary research

The second newsletter included contents on:

- News of the first official project review
- Report on the November EC Digital Ecosystems conference in Brussels
- Feature article on the integration of OPAALS disciplines
- News and updates from each of the Work Packages

And the third edition of the newsletter featured:

- Welcome from new Project Officer Florent Frederix
- Report on Digital Ecosystems at regions conference
- Summer school video available
- News and updates from each of the Work Packages

All of these materials are available to the general public through the OPAALS web site: [www.opaals.org](http://www.opaals.org).

## Conclusion

In returning to the theoretical premises at the beginning of this paper, communication and dissemination were set out as distinct concepts and practices with different implications, depending on use and context, for either locution or reception. However, it was also briefly argued that communication as dissemination is a useful concept in terms of teaching new and unfamiliar ideas or practices, as well as serving as a means of projecting information or ideas to the general public, including research and other forms of potentially applied information to a wide audience.

Furthermore, the deprivation (or complete absence) face-to-face presence, mentioned initially as well, brings into distinct question the necessity for dialogue to occur in physically common temporal and spatial conditions. For in a DE, as we hoped to have illustrated, these traditional physical requirements of dialogue have not been entirely discarded, but they have been supplanted with channels and practices that extend communication and dissemination over time, distance, language, technologies, societies, cultures and so forth.

With the dispersion of properties that customarily have been associated with the idea of communication (connections and links, exchanges and flow, symbolic interactions), and which have been distinguished from those of dissemination (transfer or transmission of material or ideas), so too has this very distinction been dispersed. One might even conceive of our modern deprivation of presence as a catalyst for the creation of other forms of communication and dissemination that again, do not necessarily do away with the usefulness of their long-standing distinctiveness, but do suggest a convergence of the traits that have otherwise separated them.

In practice, these traits lead to broader themes that have at least implicitly resurfaced in the course of this paper, namely: *commonality*, *simultaneity*, *combination*, *convergence*, *coexistence*. In other words: the commonality of purpose; the simultaneity of effort; the combination of disciplinary interests; and the convergence of ideas and practices. But as all of these larger themes still need communication and dissemination to underscore both their presence and consequence, a parallel need for *coexistence* between the conceptualisation and realisation of communication and dissemination in a NoE also resurfaces as something not only theoretically significant but also practically necessary.

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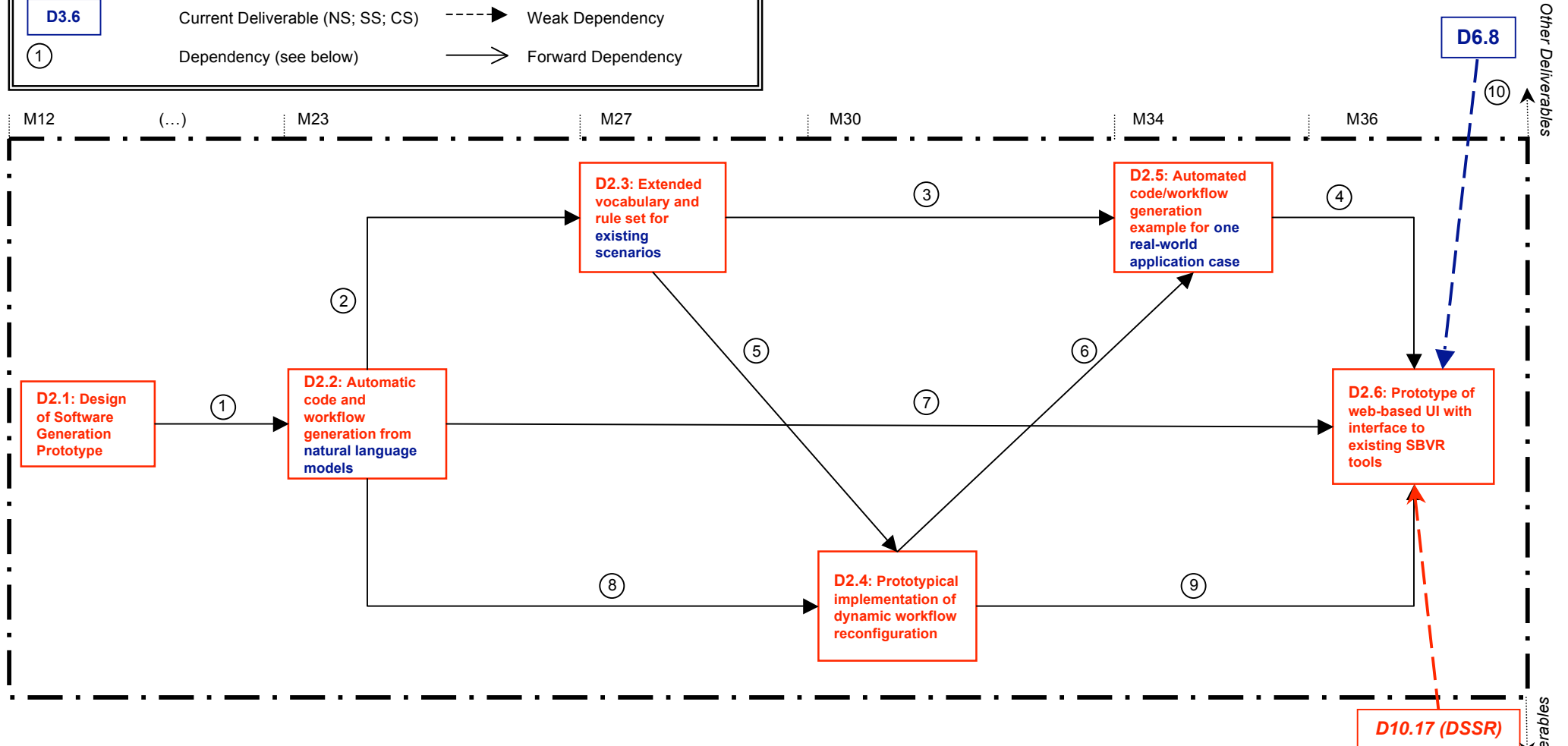
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## Appendix 1: Formal and Business Modelling Language

### Workflow Legend

M24	Project Month	→	Strong Dependency
<b>D3.6</b>	Current Deliverable (NS; SS; CS)	- - - - ->	Weak Dependency
①	Dependency (see below)	→	Forward Dependency



### Dependencies (Outputs and Inputs)

① Extension of functionality, partial implementation of design

② Basic vocabulary of the first scenarios extended

③ Generate code/workflow example based on vocabulary, rule set

④ New components merged with web-based UI, integrated with Guigoh

⑤ Vocabulary, rule set build base for prototypical implementation of dynamic WF reconfiguration

⑥ Lessons learned, implementation serve as basis for report

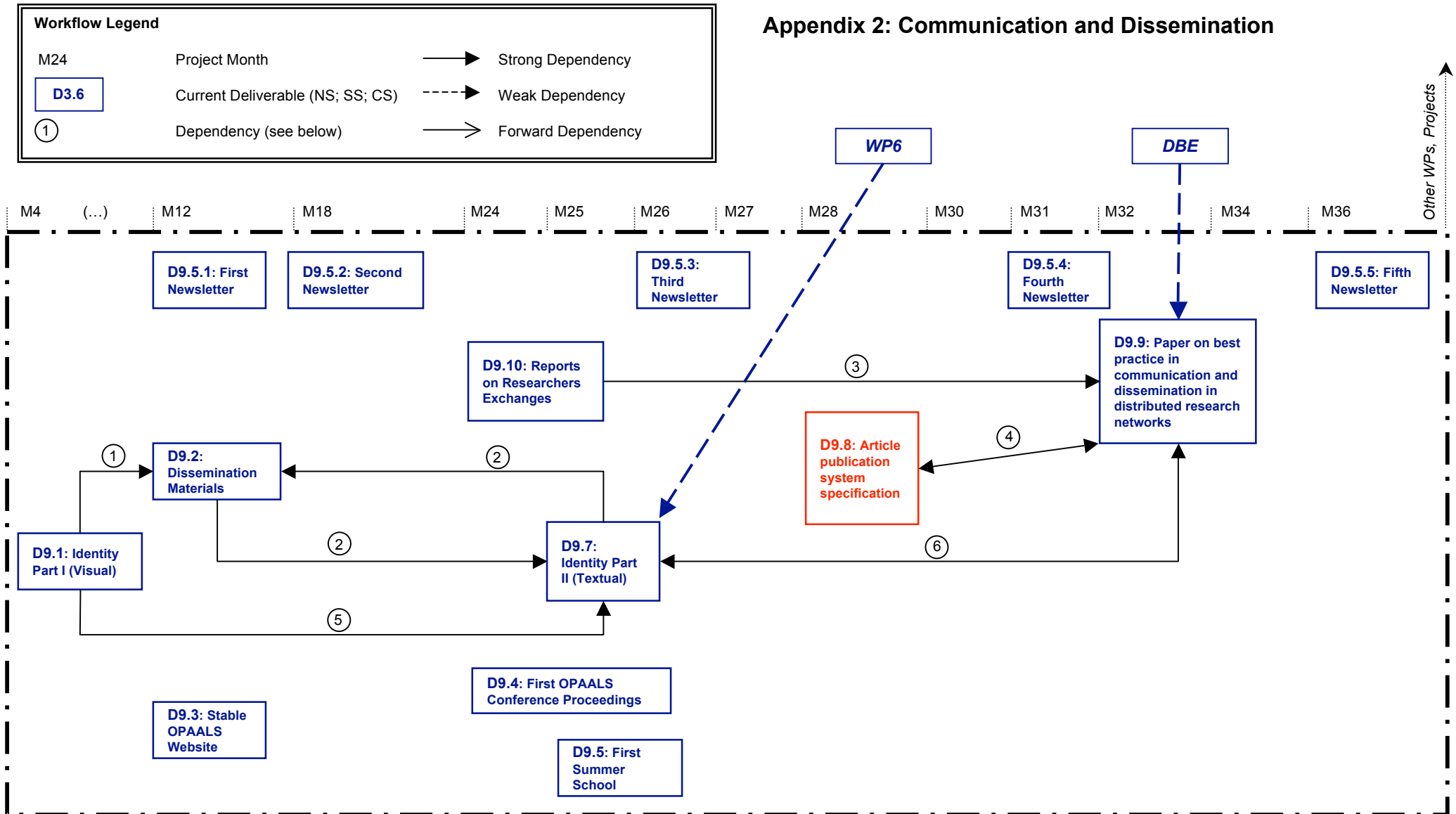
⑦ Lessons learned on stand-alone editors' feed into web-based editor

⑧ Basic components from D2.2 and architecture implemented

⑨ Implementation is integrated with UI

⑩ informal connection - parser, linguistic expertise

## Appendix 2: Communication and Dissemination



### Dependencies (Outputs and Inputs)

- ① Visual identity to be incorporated in dissemination materials
- ② Textual identity to be incorporated in dissemination materials (and vice versa)
- ③ Review of mini-projects to consider alternate means of re-dissemination
- ④ Best practices inform system specifications; system specifications inform best practices
- ⑤ Iterative review of identity to produce new guidelines
- ⑥ Co-informing and co-referencing of new branding guidelines and best practices

## Appendix 3: Socio-Economic Models

