	<b>OPAALS PROJECT</b> Contract n° IST-034824
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## **WP9: Communication and Dissemination**

### **D9.5.2 - Newsletter issue 2**

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## **Introduction**

The newsletter is an electronic deliverable that is located at a URL and provides a page of news with links. Thus it can only be properly and fully viewed online. This document uses screen shots to give an overview of the deliverable which can be found in full at:

<http://www.opaals.org/website/newsletters/2007-11-23/index.htm>



the opal

Newsletter of the OPAALS network of excellence

Issue 2 - 23rd November 2007

## Reviewers praise OPAALS and reshape the future

### Editorial

by Neil Rathbone

#### First formal review

*OPAALS has achieved a positive response at its first review, with the reviewers commenting positively on the work done, but also making important recommendations for the future.*

*September saw five independent experts, that had been appointed by the European Commission, meet with the project participants in Brussels to undertake the first formal review of the project as required in the contract. In an extremely busy two-day programme all aspects of the project were presented and discussed. The mood was intense, but friendly and constructive. In their final report the reviewers said "The OPAALS NoE has very ambitious and far reaching objectives. Despite the relatively short 9-month work period under review the project has made good progress towards achieving its objectives."*

*Commenting on the project's formal deliverables, which had been submitted in advance for study by the reviewers, they said "...some deliverables exceed the expectations while others are of average but acceptable quality. The management and the quality control is good, as shown by the internal rejection of very few deliverables which are not enough mature or do not have adequate quality."*



*The first OPAALS review was held in the Centre Borschette, Brussels*

#### A new challenge

*The reviewers also gave valuable input to the programme and acted as a 'reality check' on where it is going. While they were satisfied with the overall development of the project, commenting that OPAALS worked hard in order to create a digital ecosystems community, they felt that there was too little evidence of a shared vision for the project and a common definition and acceptance of concepts and major scientific issues. In order to build a comprehensive theoretical foundation the project should also address the economic aspects of digital ecosystems and enforce its competence in general system theory.*

*The reviewers requested a new deliverable to address this recommendation, with a more detailed and coherent 'roadmap' that defines as precisely as possible what outputs of what particular deliverables are used as inputs into other deliverables.*

*Following discussion of the reviewers comments, two new workpackages – WP11 and WP12 are proposed for Phase II. Work on the new deliverable is already under way as a Phase I task, and further work is planned under tasks T1.4 and T12.1. Commenting on the changes, Project Coordinator Paolo Dini said "This is a difficult but an interesting task. I think we are in fact already farther ahead in the direction they want us to move than we were able to convey during the review."*

## Report

### High-level conference raises political profile of Digital Ecosystems

*The profile of Digital Ecosystems was raised at a policy level in November when the European Commission held a high-level conference in Brussels to review current progress and plans.*



*Opening the conference, Gerald Santucci, Head of Unit, commented, "We have started a new scientific discipline" and he praised those who have stuck with this process.*

#### *A pioneer sets the scene*

*Guest speakers included Bruce Perens, Vice President of SourceLabs, who is one of the early pioneers of Open Source and a key person in the development and application of Linux.*

*He set the tone with his thoughtful perspective on ICT. He described the early attempts to exploit the Web that centred on designing ways to make money from it, and the way that Tim Berners-Lee decided to simply release the technology and let the users work out how to make money. Thus was unleashed a Darwinistic process, part of which was the 90s ICT boom and bust. He went on to describe Wikipedia as 'Open Source for old people', harnessing the knowledge and expertise of the older section of society.*

*On Open Source, he said that while OS appears to go against economic and capitalist theory, once you examine beneath the surface it follows known economic principles such as reduction of risk, and sharing risk and reward. In doing so it overcomes a number of inefficiencies of proprietary software.*

*He introduced the concept of differentiating and non-differentiating software, in which companies have to protect and own the former, but have no advantage in restricting access to the latter. He claimed that 95% of enterprise software is non-differentiating. Also, that 70% or more of programmers work for companies that do not sell software. Thus the larger resource for software development is within ordinary companies and that resource can be capitalised upon if it works together in Open Source projects.*

*He touched on the risk of current moves to extend EU patenting legislation driven by proprietary interests as this would kill OS. "You won't get another Linux, another Apache, another Open Office if this move is allowed to succeed." In answer to a question he said "Most innovation becomes commoditised over time. In fact the patent system recognises this by encouraging publication and protection rather than secrecy, and by limiting the time of protection, so that innovation becomes public domain."*

**Bruce Perens, Vice President of SourceLabs, who is one of the early pioneers of Open Source provided one of the keynote addresses**





### ***The user is king***

Bruce was followed by an equally enlightening address from Harry Halpin of the University of Edinburgh. He introduced the psychological aspects of the evolution of the Web and quoted statements from leading figures in current Web developments to the effect that social science is now the key area of future Web development. He described how the commercial strategies of the major software vendors are now moving towards social and data values, as evidenced by the financial interest in search engines, social networking sites, and Web 2.0 which emphasises the end user as contributor.



***Harry Halpin of the University of Edinburgh introducing the psychological aspects of the Web . "Social science is now the key area of future Web development"***

He underlined how the Web has depended on decentralisation and networking, with early attempts at centralised databases to hold hyperlinks failing to succeed. He then went on to question whether the dominance of some players who increasingly hold, control, and commercially exploit user data is damaging to the Web and to the rights of individuals to privacy. He questioned whether this was not simply another attempt at centralisation in order to monopolise the value of data.

He is encouraged by the recent flurry of start-up activity in the area of semantic web as indicative of putting control in the hands of the individual and the author, rather than relying on centralised functionality such as search engines. He concluded that Digital Ecosystems provide a means by which the citizen can take control of the technology on which they depend.

### ***Parliament represented***

Three MEPs, **Patrizia Toia**, **David Hammerstein**, and **Umberto Guidoni**, who are members of the ITRE

Committee and represent three different political parties, gave short speeches on their views of ICT and Digital Ecosystems. They endorsed the past and future work on Digital Ecosystems and the potential effect on SMEs, and the social and economic fabric of the regions. In particular they explained how the Parliament

need to support this work with legislation that supports open innovation and with encouraging a regional policy of investment in research and soft infrastructures as well as motorways and airports, and with a research investment under FP7 that features clusters of SMEs.

***MEPs, Patrizia Toia, David Hammerstein, and Umberto Guidoni***



Asked how they would turn these 'fine words' into real world action, they commented that they are personally spreading awareness and encouraging participation, and questioning their own administrative system's imposed limitations on Open Source software. At a political level they are challenging why the Commission did not yet take up in FP7 the suggestions of the Parliament and Council regarding Digital Ecosystems, and are taking a keen interest in the current IPR debate in order to defend the interests of Open Source and Digital Ecosystems.

#### SME winners rewarded

The conference made awards to several SMEs. Gold went to Europa Active Club for their online travel agency application, while silver was taken by EMNET for using the Business Modelling Language concept to facilitate collaborations between suppliers and users of products and services. Bronze awards went to two SMEs, Dialcom Networks, for their web support and P2P videocall, and Gabilos, for creating a tourism platform involving wholesalers, hotels and travel agencies. In addition to the SME awards, a special regional award was presented to the region of Aragon for their work on SME adoption of Digital Ecosystems.



150 delegates from Europe and beyond attended the meeting, which was simultaneously translated into 5 EU languages, with a similar number logging in via the webcast that was recorded and is available at <http://de-2007.eu>.

#### Feature Article

##### An integrated theory

By Paolo Dini and Gerard Briscoe (LSE), Alastair Munro and Sonia Lain (UNIVDUN)

The transfer of biological and natural world phenomena via algorithms into computing and autopoietic systems is a core challenge for OPAALS. Here, some of those involved in this work report on key aspects and their approach to providing a common framework, largely inspired by systems theory, that will help organise the research of the project in both its social science and computer science domains.

### 1. Experimental work on the p53-mdm3 regulatory cycle

p53 is perhaps the most important and best characterised tumour suppressor protein. As such, its primary function is to stop proliferation and/or kill damaged cells. Hence, its levels and activity are tightly regulated through a negative feedback loop mechanism. p53 is known to induce the synthesis of its negative regulator mdm2. mdm2, which itself has a very short half-life, interacts with p53 and functions as an E3 ubiquitin ligase that promotes the conjugation of p53 to ubiquitin. This modification effectively targets p53 for degradation. Contributing to its 'anti-p53' function, mdm2 is also thought to impair the activity of p53 by masking its transactivation domain. In response to stresses (e.g. DNA damage) the interaction of p53 with mdm2 is impaired and p53 accumulates leading to a halt on cell proliferation or to the induction of cell death by apoptosis. Furthermore, p53 levels have been shown to oscillate in response to DNA damage. Whether these oscillations are digital is still a matter of debate.

We have identified a series of mdm2 mutants that are deficient at degrading p53. As mentioned above, mdm2 levels are increased through p53's ability to increase Mdm2 gene expression. Additionally, mdm2 levels can be increased through the simple interaction of p53 with mdm2. Supporting this, small molecules that mimic p53 binding to mdm2 lead to an elevation in mdm2 levels. We observed that unlike the levels of wild type mdm2, the levels of the mdm2 mutants we study are not effectively increased by interaction with p53. This implies that the interaction of mdm2 with p53 causes a conformational change or modification on mdm2 that protects it from degradation and that this change cannot occur with the mdm2 mutants.

By expressing this new concept mathematically we have developed a set of equations that lead to an oscillatory behavior of p53 and mdm2 levels in response to stress. This oscillatory behavior is lost when we the term expressing the stabilization of mdm2 by its interaction with p53 is omitted.



Image 1

Expressing increasing amounts of wild type mdm2 (wt mdm2) decreases p53 levels in cells. This decrease is significantly impaired when an mdm2 mutant (EVEmt) is used. Note that the levels of the mdm2 EVE mutant are lower than the levels of wild type mdm2.



Image 2

mdm2 levels in cells are increased in the presence of nutlin-3, a small molecule that mimics the binding of p53 to mdm2. The levels of the mdm2 EVE mutant are less effectively induced by nutlin-3. β-gal is a control protein that does not respond to nutlin-3 and is used to evaluate the quality of the procedure.



## 2. SBML as a bridge between Systems Biology and Software Engineering

*Biomimicry in engineering is a long established process, and probably started with Leonardo Da Vinci's during the renaissance, with his flying machine designed around the anatomical structure of birds. Despite his genius it is still debated as to whether his flying machine would have flown, which provides a reminder that such research may not be a straight forward process.*

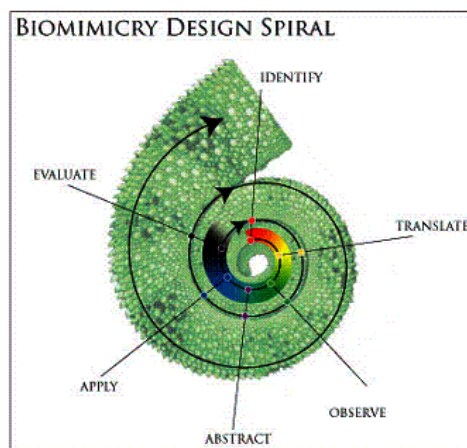


Diagram showing the Biologically Inspired Design Process

*Nature has been in the research business for 3.8 billion years and in that time has accumulated close to 30 million "well adjusted" solutions to a plethora of design challenges that humankind struggles to address with mixed results. Biomimicry is an emerging discipline that seeks sustainable solutions by emulating nature's designs and processes. There are some great opportunities to learn how Nature has designed elegant solutions for some tough human-made problems.*

*In the DBE project we researched using biomimicry in computing engineering to create the Evolutionary Environment Software Ecosystem, mimicking the processes of evolution and ecosystems to create an Ecosystem-Orientated Architecture (EOA). Despite its success, the key distinction between our software ecosystem (EvE) and a biological ecosystem could be stated succinctly as a lack of autopoiesis, which is a construct for self-organisation of biological ecosystems. To create a digital ecosystem that demonstrates autopoiesis, we will need to determine the design patterns of the autopoietic constructs and algorithms common to all biological ecosystems. "In software engineering, a design pattern is a general repeatable solution to a commonly occurring problem in software design. A design pattern is not a finished design that can be transformed directly into code. It is a description or template for how to solve a problem that can be used in many different situations. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. Algorithms are not thought of as design patterns, since they solve computational problems rather than design problems." Extending this concept, Biological Design Patterns (BDPs) will catalogue common interactions between biological structures using a Pattern-Orientated Modelling (POM) approach, which here will provide autopoiesis. These BDPs could eventually be applied to our software ecosystem to endow it with the same self-organising capabilities found in biological ecosystems, and one of the ways in which this will be evident will be the ability to apply the evolutionary process at a lower level of granularity than previously possible, i.e. the object and method level, instead of the service level as is currently done. We are currently focusing on intracellular behaviour for the BDPs of our interactive model of computing, because cells are fundamental to the autopoietic behaviour inherent in life, being the basic unit for the construction of all life and which operate almost entirely through the process of gene expression. Cells are the biological construct that most obviously show autopoietic behaviour, which is a process working similarly a multiple levels of scale, and so an understanding of cellular operations is a critical first step in providing an tangible understanding of autopoiesis. To this end we will develop a modelling framework based on the Systems Biology Modelling Language (SBML), which utilises a domain modelling methodology based on UML to represent biochemical pathways.*

*"This UML-based definition in turn is used to define an XML Schema (Fallside, 2000; Thompson et al., 2000; Biron and Malhotra, 2000) for SBML. There are three main advantages to using UML as a basis for defining SBML data structures. First, compared to using other notations or a programming language, the UML visual representations are generally easier to grasp by readers who are not computer scientists. Second, the visual notation is implementation-neutral: the defined structures can be encoded in any concrete implementation language—not just XML, but C, Java and other languages as well. Third, UML is a de facto industry standard that is documented in many sources. Readers are therefore more likely to be familiar with it than other notations."*

*This framework includes a translator from the specified chemical reactions to the corresponding differential equations for the time-evolution of the concentrations of the reactants and products. Differential equation models can then be investigated in Mathematica and other similar packages. Whereas we hope that this approach will help UNIVDUN's research in the modelling of cell regulatory cycles, the benefit arises mainly from the use of a domain modelling methodology that is based on UML. In other words, strengthening the formal and semi-formal language links between biology and software engineering.*

### 3. Mathematical framework for interaction computing

*We are examining some ideas related to the connections between cell biology and software security. This work is being done in collaboration with the BIONETS project ([www.bionets.org](http://www.bionets.org)) where Daniel Schreckling, a researcher in software security from the University of Hamburg, is showing a similar interest to develop a biologically inspired mathematical framework for interaction computing. From the point of view of OPAALS, therefore, software security represents a potential field of application of the theory. The fact that Digital Ecosystems research is currently weak on security aspects makes this collaboration particularly welcome.*

*The bridge that we are in the process of building between these two very different fields relies on abstract algebra and logic and can be simplistically depicted as follows:*

cell biology - algebra - logic - security

*In this context security represents one of the possible applications of a formalism that we expect to be of wider relevance. When referring to biologically inspired computing, reliance on some kind of evolutionary framework tends to be assumed by default. Whereas biological evolution does represent an essential model for biologically inspired computing, in this work we are focussing on the 'other' function of DNA. By this we mean all the processes relating to the life of the individual organism, thus a better name could be 'development', or 'morphogenesis', or 'gene expression'.*

*As noticed by Crick and Watson themselves, it appears that the DNA code has a non-trivial and non-random formal structure. In the last 20 years or so several models have been proposed, with the latest ones going beyond a Boolean algebra, to a Lie algebra. A Lie algebra is a vector space whose elements satisfy certain properties with respect to a binary operator called a 'commutator'. The DNA code of 64 codons is in fact a Galois field extension (and therefore a finite vector space) most of whose quotient fields provide taxonomies for well-known physico-chemical characteristics of the corresponding amino-acids. Foremost is hydrophobicity, which is directly related to protein folding structure, which in turn is related to protein function.*

*Our current activities are focussed on understanding the abstract algebra and its connections to non-standard logics. The objective is to reach a mathematical model that can formalise the stable interactive behaviour of the cell components into an organisationally closed system that represents the archetype autopoietic system (i.e. a stem cell). Because cell biology is fundamentally digital, our hope is that by formalising cell-biological structure and behaviour in this manner we will arrive at the Interaction Machine model of computation as the kernel of digital autopoietic systems.*

### 4. In Principio Erat Verbum

*In 1917, D'Arcy Wentworth Thompson was appointed to the Chair of Natural History in St Andrews University. Thereafter, several times a day for the next 30 years, he passed through an archway which led both to the Bell Pettigrew Museum (where he worked) and to St Mary's College. Above the archway are the words from the opening sentence of the gospel according to St John's "In Principio Erat Verbum"—In the beginning was the word.*

*We have to start with words because, otherwise, all will end in confusion. The OPAALS project brings together researchers and practitioners from a broad variety of disciplines. We all have our own specialist vocabularies: our discipline-specific words; our own specific meanings for words in common use. We each bring understanding of our own discipline and the potential to misunderstand, or entirely fail to comprehend, the disciplines of others. The clear definition of the terms used in biology, as it applies to the OPAALS project, has therefore been an important initial task for WP1 and the clear presentation of such definitions is an important component of our first deliverables (at Month 18).*

*Following the first review, the reviewers have asked for a paper that can serve a similar function to orient the project toward an overarching or we could even say archetypal model of an Autopoietic Digital Ecosystem. We expect this paper to lay the groundwork for a theory of autopoiesis in computing, which is likely to be based on some form of interaction computing. At the same time, the paper will also review and begin to assess the application of autopoiesis and systems theory to social science disciplines. Interestingly, such adoption by social science of concepts from second-order cybernetics has been strongest in the field of linguistics and philosophy of language. The strongly relativist philosophical stance upon which Maturana and Varela based their theory is in fact perfectly compatible with the inter-subjective construction of reality of social constructivism.*

<http://freethinkr.wordpress.com/2007/06/>

[http://en.wikipedia.org/wiki/Design\\_pattern\\_\(computer\\_science\)](http://en.wikipedia.org/wiki/Design_pattern_(computer_science))

<http://sbml.org/specifications/sbml-level-2/version-1/html/sbml-level-2.html>

#### News

##### Rome conference imminent

*As we go to press, the 1st international OPAALS Workshop is about to get underway in Rome from 26th to 27th November. The main objective is to contribute in the development and the promotion of innovative research in the field of Digital Ecosystems. See <http://www.opaals.org/conference.php> for more information.*



*Based heavily on papers specially written by key players in the DBE and OPAALS projects, the book describes not only the science, but also the social, community, and economic aspects. It also contains a range of case studies and project descriptions from the Digital Ecosystems 'cluster' of projects.*

[illegible]

*news by work package*

*In the 6 months from June 2007 WP1 has been active in four areas:*

- The fourth activity is meant to provide a common framework, largely inspired by systems theory, that will help organise the research of the project in both its social science and computer science domains.*

[See 'Feature Article']

## New sourceforge project born

by Thomas Heistracher

*Finally in October, SUAS hosted the “Salzburg OKS workshop” where about 20 OPALS researcher contributed to push forward the vision of SBVR-integration, OKS conception and OKS visualization.*

[wiki.opaals.org/SalzburgMeeting2007](http://wiki.opaals.org/SalzburgMeeting2007)

## WP3 Autopoietic P2P Networks

### **P2P and trust**

by Paul Krause

*WP3 has finalised the design of an agent-based distributed transaction model. This enables SMEs to collaborate in long-term transactions, without a single "governing" authority (unlike the case with Expedia, for example). This work has also supported the development of a fully distributed P2P architecture to support open and trusted collaborations between SMEs to ensure their sustainability within a pan-European Digital Ecosystem. Formal models have also been developed that allow analysis of performance for the most critical parts of the supporting P2P network infrastructure. The resulting simulations demonstrate good performance with regard to traffic complexity and scalability. .*

## WP4 Distributed Accountability Identity And Trust

### **Weaving a web of trust**

by Paul Malone

*Highlights of the workpackage 4 Phase I outputs are a distributed identity model, a distributed trust model, an initial distributed accountability model and a framework and algorithm set for collaborative knowledge sharing and data mining.*

*The distributed identity model uses a SAML 2.0 assertion approach in providing a web of trust type identity provider services. The model is described in deliverable D4.1, which will be made available at the end of November 2007. Work has begun on implementing this model and will continue over the next months.*

*The distributed trust model is reported in D4.3, which is currently with the internal reviewers. The approach is to use a trust overlay network which makes use of collaborative trust assertions in building trust among participants.*

*The distributed accountability model was reported in D4.2, which was accepted at the recent 12 month project review in Brussels. The accountability model makes use of a previously published model called Peermint which addresses distributed accountability for single service consumption. This has been augmented with a composed service accountability model to allow for truly distributed accountability for peer-to-peer composed services.*

*The collaborative knowledge sharing task has provided a framework for knowledge sharing together with novel approaches to knowledge sharing combining data mining, formal concept structure and a unification of cluster and associative analysis in knowledge extraction.*

*Going in to phase II, workpackage 4 tasks are being moved to workpackage 3, where the emphasis is on computer science aspects and workpackage 12, where the social science implications of accountability, trust and identity are being examined. The main goal in phase II is to form a unified framework of distributed identity, accountability and trust for digital ecosystems, to implement these models and integrate with the project wide infrastructure via workpackage 5.*

## WP5 Integration With DE Infrastructure

### **A distributed OKS**

by Jesús E. Gabaldón

*Among different Open Source tools the OKS Desktop uses OpenOffice within an integrated working environment allowing the cooperative editing of documents, presentations and spreadsheets. The OKS Desktop will be the first of the two means by which OPAALS partners will consolidate the cooperative secure working environment, while furthering research on Digital Ecosystems by easing the exchange of information between partners from different disciplines.*

*In Phase II, Workpackage 5 will be integrating and testing the automatic code generation, the autopoietic P2P network supporting the transaction manager, and the distributed accountability, identity and trust subsystems. The aim is a step-by-step integration of distributed server-side protocol for optimising new generation client-side Web 2.0 technologies such as Ajax.*

*With the forthcoming contribution of the Fachhochschule Salzburg, and the Waterford Institute, Ireland, on the Automatic Code Generation from Models and the Distributed Accountability, Identity and Trust Sub-Systems, respectively, Techideas is going to test and finalize the component integration in the OKS.*



## WP6 Socio-Economic Constructivism And Language

### Language is the key to interdisciplinary research

by Oxana Lapteva

Work package 6 is conceptualising different aspects of language, socio-economics and their relation to digital ecosystem. By means of a language focus it aims for a systematic approach for the representation of interdisciplinary research networks as aggregated systems of knowledge production.

The first formal OPAALS project review crystallised the current state of research in work package 6 and collaborative relations among OPAALS partners. A few examples are:

Researchers from UniKassel introduced their work carried out in the broad domain of discourse organisation in epistemic cultures. Their work conducted in the first year of OPAALS dealt with the organisation of discourse in knowledge communities (epistemic cultures). The results constituted the deliverable D6.1 which provided an extensive and critical overview of different methodological and theoretical framework which are relevant to language/communication and knowledge production in Digital Ecosystem. The deliverable was developed through the collaborative work of members from different research disciplines (computer science, social science, and linguistics).

Discourse organisation and knowledge production also influence the work of task T6.2. (Theoretical implications for a structural grammar of metaphors (metaphorology) in DEs). It is based on the fact that within the OPAALS projects multiple metaphors are being used (to start with: Digital Ecosystem) which on the one hand enrich the different modes of knowledge production and representation but on the other hand also can result as a bottle-neck for interdisciplinary work and create mis-understandings. The collaborative work with other partners emphasises several aspects of creating a joint index of OPAALS in order to facilitate interdisciplinary work and enhance mutual understanding.

Task T6.3 (Community currencies for Digital Ecosystems) was introduced during the review by the LSE and reflects strong connections between different partners of the OPAALS community (LSE, WIT, UniKassel, CN). Main streams of research are: trust foundations; business agents; ICTs; exchange; sustainability; money and social constructivism; CCs and everyday contexts of life; money, language and symbolic forms of power. The overall language approach in WP6 is also present in this task, focussing on the communicative aspects of currencies and money in general and on its influence on social structure and networks. During the review interesting discussions arose and underlined the fact that Community Currencies is an important topic within the Digital Ecosystem context with many synergetic aspects that lead to interdisciplinary cooperations.

Birmingham City University introduced task T6.7 (Run-time business model specification & real-time infrastructure adaptation), which aims at investigating the relationships between formal logic underpinning SBVR and formalisms aimed at modelling processes, parallel composition of processes and synchronous communication between processes.

## WP7 Community Networks And Digital Ecosystems

### Trentino as a Lab

by Francesco Botto

CREATE-NET is involved in the TasLab project with the intention to develop the Digital Ecosystems vision and practice in Trentino Region.



### Vision :

The vision of the TasLab LL is to support the never ending evolutionary process which the local communities, users and enterprises (especially SMEs) are facing every day due to changing market conditions. With our eco-systemic approach and continuous investments in ICT innovation we will enhance the local specificities and vocations, while increasing the collaboration and the sharing of knowledge among the different stakeholders of local innovation. The ecosystemic approach is also empowered by a relational and conceptual model, the "Innovation Tripole", that puts the users at the center of the innovation processes together with the enterprises and the research players that are active on the local territory. Our Vision is Innovation as the way of being thinking and Evolving.

### **Mission:**

The main goal of **Taslab** is to create an advanced innovation infrastructure capable of responding to present and future user needs, not only from an ICT perspective but also from a cultural and social point of view. The plan is to reduce the digital divide, and at the same time to experiment new ICT solutions, with deep user involvement, all over the Trentino mountainous territory.

The main **Taslab** activities include:

- Develop a citizen-centric environment where innovation is the way of being, thinking and evolving of the Trentino people;
- Develop an environment where the full innovation cycle, from basic research to market products, naturally develops;
- Develop partnerships with other territories in Europe and in the world, building on top of the existing national and international cooperation and partnerships of the Trentino actors;
- Exploit the results of the previous activities towards a sustainable, environment and people aware, development of the Trentino region.

The approach is articulated in a horizontal and in a vertical dimension. In the horizontal dimension, the approach is to take an eco-system oriented (socio/economic) perspective where different actors (citizens, public administrations, enterprises and research entities), the organisms of the ecosystem, interact with one another evolving on the base of the local/global conditions. The horizontal multidisciplinary eco-system driven approach is coupled, in the vertical dimensions, with a focus on the Trentino's vocation areas, namely those areas which are core in the Trentino value system (e.g., eInclusion, eMobility, eBusiness and eTourism, quality of life and eEnvironment).

<http://www.taslab.it>

## **WP8 Open Source And Open Knowledge**

### **The meaning of value**

by Maha Shaikh

Developing the idea of OSS 2.0 further, our study continues to map the subtle changes that OSS is undergoing over time in search for greater commercial viability. WP8, with D8.1 laid the foundation of OSS 2.0 stressing how 'value' is the key term, with two of its connotations especially significant - value as in 'value for money' and value as in 'acceptable community values' (see Table 1).

<b>Process</b>	<b>FOSS</b>	<b>OSS 2.0</b>
<b>Development Life Cycle</b>	<ul style="list-style-type: none"> <li>• Planning—"an itch worth scratching"</li> <li>• Analysis—part of conventional agreed-upon knowledge in software development</li> <li>• Design—firmly based on principles of modularity to accomplish separation of concerns</li> <li>• Implementation                             <ul style="list-style-type: none"> <li>◦ Code</li> <li>◦ Review</li> <li>◦ Pre-commit test</li> <li>◦ Development release</li> <li>◦ Parallel Debugging</li> <li>◦ Production Release</li> </ul> </li> </ul> <p>(often the planning, analysis, and design phases are done by one person/core group who serve as "a tail-light to follow" in the bazaar)</p>	<ul style="list-style-type: none"> <li>• Planning—purposive strategies by major players trying to gain competitive advantage</li> <li>• Analysis and design—more complex in spread to vertical domains where business requirements not universally understood</li> <li>• Implementation subphases as with FOSS, but the overall development process becomes less bazaar-like</li> <li>• Increasingly, developers being paid to work on open source</li> </ul>
<b>Product Domains</b>	<ul style="list-style-type: none"> <li>• Horizontal infrastructure (operating systems, utilities, compilers, DBMS, web and print servers)</li> </ul>	<ul style="list-style-type: none"> <li>• More visible IS applications in vertical domains</li> </ul>
<b>Primary Business Strategies</b>	<ul style="list-style-type: none"> <li>• Value-added service-enabling</li> <li>• Loss-leader/market-creating</li> </ul>	<ul style="list-style-type: none"> <li>• Value-added service enabling                             <ul style="list-style-type: none"> <li>◦ Bootstrapping</li> </ul> </li> <li>• Market-creating                             <ul style="list-style-type: none"> <li>◦ Loss-leader</li> <li>◦ Dual product/licensing</li> <li>◦ Cost reduction</li> <li>◦ Accessorizing</li> </ul> </li> <li>• Leveraging community development</li> <li>• Leveraging the open source brand</li> </ul>
<b>Product Support</b>	<ul style="list-style-type: none"> <li>• Fairly haphazard—much reliance on e-mail lists/bulletin boards, or on support provided by specialized software firms</li> </ul>	<ul style="list-style-type: none"> <li>• Customers willing to pay for a professional, whole-product approach</li> </ul>
<b>Licensing</b>	<ul style="list-style-type: none"> <li>• GPL, LGPL, Artistic License, BSD, and emergence of commercially oriented MPL</li> <li>• Viral term used in relation to licenses</li> </ul>	<ul style="list-style-type: none"> <li>• Plethora of licenses (85 to date validated by OSI or FSF)</li> <li>• Reciprocal term used in relation to licenses</li> </ul>



*D8.2 refined the implications of the two meanings of value through the study of three global multinational companies engaged in Inner Source software development while stressing that acceptable community values is something different for Inner Source in comparison to open source for the simple reason that Inner Source development and developers are restricted within their organizational boundaries. Thus the usual meaning of community in open source which tends to imply, from a commercial focus looking outwards, to be a separate and nebulous collection of developers working across spatial and temporal boundaries is not applicable for Inner Source. Table 2 (below) summarizes the main differences and points of comparison between traditional software development and Inner Source and then, importantly, shows the significance and applicability of our findings to the OPAALS research environment.*

	<i>Traditional Software Development</i>	<i>Inner Source Software Development</i>	<i>OPAALS Research Environment</i>
<i>Implemented in OPAALS</i>	Code held in a local context	CVS and associated tool usage	Participants may not share the same physical environment More distance interaction.
	Much face to face communication	More towards distance interaction	
	Breadth of ideas and thinking likely to be a lot smaller.	Breadth of ideas greatly increased.	Breadth of ideas greatly increased.
	Focus on release binary	Focus moves to producing source code for CVS submission.	Researcher focus should shift to OKS submission.
	Code quality is dependent of a few key people within a project	Code quality is a concern of everyone across multiple projects	Research quality is a cross cutting concern of all OPAALS partners.
<i>Planned</i>	Code review takes place at key points	Constant code review	Constant content review may or may not be plausible.
	Code exists in an isolated manner with the possibility of major company resources being used to solve a problem multiple times.	Resources are less likely to be wasted on solving a problem many times as anyone can check if someone is attempting a solution with the correct communication structures in place.	In the long term a global OKS would be a great reference point to examine current research.
<i>Not Applicable</i>	Tools and methods vary from project to project.	Corporate wide policy of tools and methods	Tools and methods still vary from partner to partner.
	Costing of a project is easily tracked with defined resources and costs being easily tracked with each project group.	Costing of inner source becomes much more difficult as code contributors can potentially come from any department or project	Costing not necessarily an issue but attributing authors might be a comparable issue.

*Table 2: Comparison of Traditional Software with Inner Source Software Development  
and Implications for OPAALS*

*Finally, in D8.3 we returned to the idea of open source with emphasis on the different interpretations of ‘openness’ that are prevalent in literature. We built a conceptual understanding of openness before focusing on a number of open knowledge initiatives (which have enjoyed varying degrees of success). The findings from our cases contributed to our understanding of what we now term OSS 2.1. This evolving nature of OSS was made obvious to us and built on our appreciation of issues of community fostering, knowledge creation and sustaining a collective, organizing of resources, communication and control, controlled communication, and governance models.*

#### *Third International Conference on Open Source Systems, University of Limerick*

*Prof. Brian Fitzgerald hosted the Third International Conference on Open Source Systems, which was held at the University of Limerick from 11 th to 14 th July, 2007. International researchers and practitioners from the USA, UK, Australia, India, Malaysia, China, Brazil, Turkey, Greece, Norway, Sweden, Australia, Belgium, Finland, Italy, Austria, Poland, Spain, France and Switzerland presented their research findings and practical experiences in a number of paper presentations, workshops, panels and poster sessions.*

*In addition, the conference featured eminent keynote speakers such as Karl Fogel, QuestionCopyright.org, Ari Jaaksi, Nokia and Sandro Morasco, Università degli Studi dell’Insubria . Together with generous sponsorship from Science Foundation Ireland, Google and LERO, the Irish Software Engineering Research Centre, the conference was a truly remarkable event.*



Pictured left to right: Karl Fogel, QuestionCopyright.org, Linda Clifford, Google and Brian Fitzgerald, University of Limerick

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## **WP9 Communication And Dissemination**

### **Who are we? What are we?**

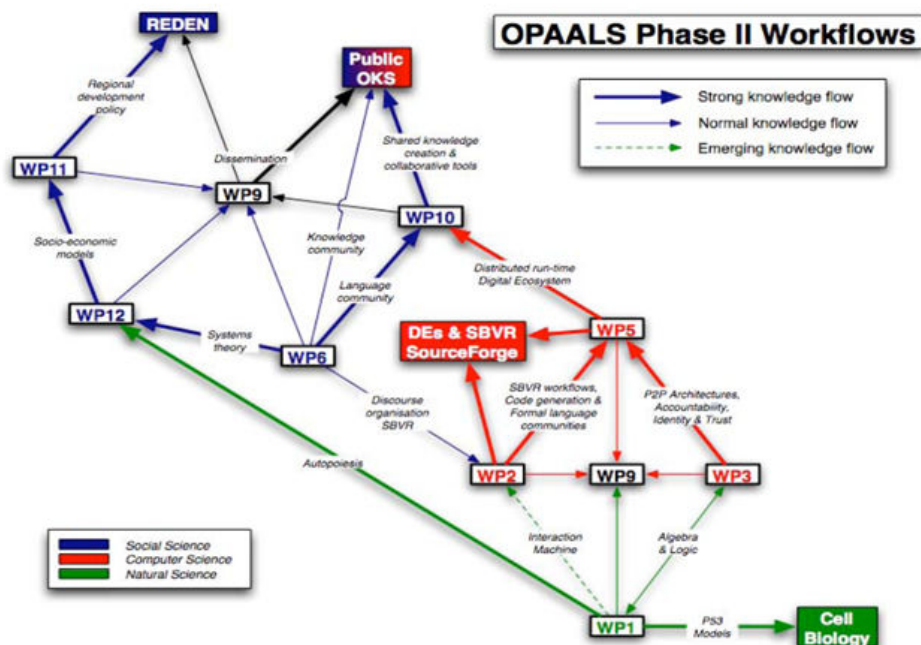
by Neil Rathbone

These are questions that we have to answer succinctly over the coming months. The reason is that OPAALS needs to develop and project an identity; a brand, that will serve to identify who we are, what we do, and how we do it. Such an identity can be thought of like the personality of an individual. Our personalities are projected in the way we talk, the way we behave, and even the way that we dress. We have a temporary style, derived from the DBE for continuity, and that style has lots of possibilities for development, being based on a tiling algorithm. However, as a network we need to first develop a synthetic personality that represents our aims and values, before we can begin to express that personality in words and images. That process starts with some introspection and ends with a statement that serves as the basis of rules, codes and design briefs. The process will begin with a survey of network member's views and choices and will end with a professional articulation in words and visual style that expresses what we want to say about ourselves.

Changes for Phase II



Several existing tasks have been logically re-grouped under WP9 for Phase II of the project. WP9 interfaces with many parts of the project workflow, as indicated by its appearance twice in the workflow diagram below.



WP9 appears twice due to the number of interfaces with other Work Packages (and does this design remind you of a tiled butterfly?)

The final list of tasks that are in Phase II are

- Identity and branding
- Public Website
- Online Newsletter
- Dissemination events
- Cooperative article tool
- Network exchanges
- Community enlargement

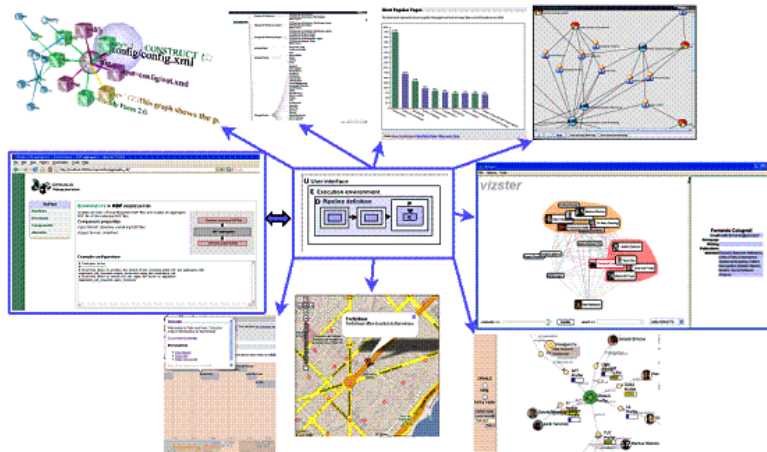
In addition, the Work Package has taken on an extra task to capture the knowledge emanating from our experiences about dissemination and communication in the context of a research network, and to produce a best practice guide in the final months of the project. Thus communication and dissemination has become, in this task at least, part of the research process.

## WP10 Sustainable Community Building

### Wille has been born!

by Markus Mannio

The autumn has been a busy time in the visualisation front of the OPAALS project. This work has resulted in the birth of "Wille -- the visualisation environment" which encompasses the work done in task 10.5. Thus, the concepts previously referred as a visualisation system or environment for the Open Knowledge Space (OKS) can now be shorthand to Wille. Fully working visualisations created with Wille have been made earlier in the year available to the OPAALS community via the wiki. More recently a visualisation workshop was organised by Salzburg University of Applied Sciences (SUAS) in October where Wille was introduced and discussed. The workshop participants were actually using Wille individually via standard web browser for parametrising, executing, and viewing visualisations. To highlight the process aspect of visualisation a set of scenarios were performed in the workshop where participants could, for example, update their own profile information in the wiki and see the changes in a visualisation depicting persons and their research interests connected together. In this manner information visualisation can become a natural part of the daily processes supporting community activities



*Wille (Browser and Processor) with examples of supported visualisation models and components.*

*The usage of Wille is, naturally, not limited to the workshop scenarios since one of the core ideas behind the system is to make it usable and useful for a wide range of applications. Thus, the component-based pipeline architecture of Wille aims to support variety of data and visualisations and is not limited to the OKS usage. Some of the currently integrated visualisation components are illustrated in the image above where the Wille parts - Wille Processor and Wille Browser - are shown in the middle. The first proof-of-concept version of Wille is being released at the end of 1st phase of OPAALS. However, you can access the source code and documentation already by contacting the TUT team (e.g. markus.mannio@tut.fi) or navigating to the wiki:*

[http://wiki.opaals.org/WP10\\_Sustainable\\_Community\\_Building/T10.5](http://wiki.opaals.org/WP10_Sustainable_Community_Building/T10.5)

### **Diary dates:**

**November 26-28**

OPAALS conference, Rome

**June**

1st Summer school, Limerick

### **Useful links:**

[OPAALS Website](#)  
[Open Knowledge Space](#)  
[OKS Wiki](#)  
[Work Packages](#)