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WP9: Communication and dissemination

Del 9.5.4 - Newsletter - issue 4

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The information marked with an asterisk () is provided in order to address Recommendation n. 4 from the Year 2 review report*



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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://opaals.org/website/newsletters/2009-01-30/index.htm>



the opal

Newsletter of the OPAALS network of excellence

Issue 4 - 30th January 2009

Integration is the key theme now

Editorial

by Neil Rathbone

Evolution is changing



The project is currently being significantly affected by several milestone events that are re-shaping its structure and activities. In September the 2nd year review was critical of several aspects and requested changes. Chief among these was greater integration of the work packages, which has been in part addressed by the formation of the Integration Coordination Team (ICT) described in detail later in this newsletter. Integration is also taking place at the level of the architecture and infrastructure, through intense discussions initiated and moderated by Mark McLaughlin of WIT, and along various theoretical threads to which several partners are participating actively (Sotiris, Mehita, Gerard, Renata, Thomas K, Fernando, Paolo, to name a few)."

At the same time Amendment 4 was rejected on specific points. As a consequence, Amendment 4 was resubmitted to address purely administrative issues and Amendment 5 was compiled for the issues that needed swift approval, while Amendment 6 was begun in order to address the reviewers' recommendations. As I write this we are still awaiting

approval of Amendment 5, which means that some partners are experiencing issues of resources.

January saw the 2nd General Meeting, which was conscious of the approaching end of Phase II in May and the need to achieve programmed objectives by then. In particular the need to have the full version of the Open Knowledge Space (OKS) operational in peer-to-peer mode as a demonstrator of Digital Ecosystems in the knowledge sphere, as well as enhancing the project's working area from the current wiki and repository tools.

As the project changes its focus, new Work package leaders have been appointed, and the natural science domain has been merged with the computing domain to form the new Evolutionary and Interactive Computation Domain, led by Paul Krause.

As the world enters economic crisis, we can perhaps lift our heads above these issues of the moment and reflect on the important purpose of our work to the economy of the future. In his presentation to the General Meeting Paul Krause pointed out that the cataclysmic event of 65 million years ago wiped out the large and relatively homogenous Dinosaur species in one event. This allowed some of the smaller and more varied species to emerge into the sunlight and evolve along several lines, one of which eventually led to humans. As we celebrate the 200th anniversary of the birth of Charles Darwin we can perhaps ponder the role that history will attribute to Digital Ecosystems in the evolution of human economic and social life.

Diary dates:

3rd IEEE International Conference on Digital Ecosystems and Technologies

Istanbul, Turkey, 31 May -3 June 2009

The main conference theme is to strengthen ICT to support different digital ecosystems, especially focusing on cyber engineering and human space computing. It is the study of triangle relationship between industries, human endeavours and advanced ICT. See the conference [web site](#).

Useful links:

[OPAALS Website](#)
[OKS Wiki](#)
[Work Packages](#)
[File repository](#)

News in brief:

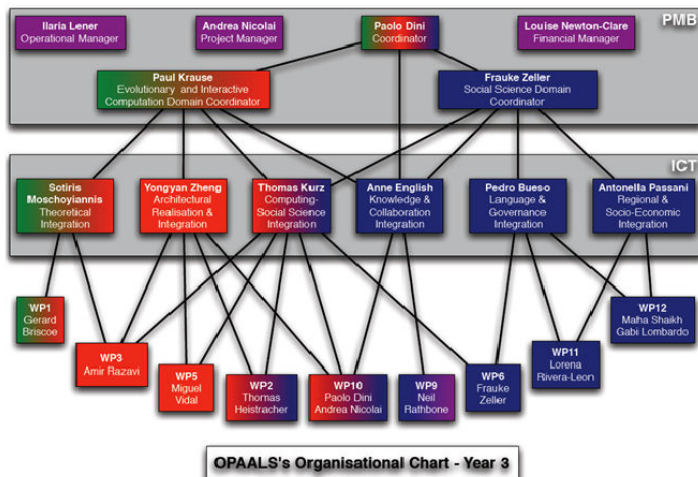
WP leadership changes

There have been some

Project launches Integration Coordination Team

In December the project announced the completion of a new coordination body inside the consortium: the **Integration Coordination Team, or ICT for short**.

The ICT answers one of the Year 2 Review recommendations to improve the degree of integration between work packages. It does this by creating a specific co-ordination team. This is not an administrative body but a team within which each individual is dedicated to facilitating cross-disciplinary interaction between specific work packages and tasks.



OPAALS's Organisational Chart - Year 3

Sotiris Moschogiannis - was singled out by the reviewers for his work on theoretical integration and will chair the new team, which comprises:

Yongyan Zheng - had already been identified as the right person to lead the architectural integration and coordinate the implementation activities.

Anne English - for whom the PMB defined a new task in WP10 in the original 4th Amendment, addresses a good part of the responsibilities associated with this new role.

Thomas Kurz - who has been playing the role of an Integration Coordinator for several years now, across the DBE and OPAALS projects.

Pedro Bueso - who's experience and background in Law makes him an extremely valuable member of this new body, given the governance subtext implicit in its formation.

Antonella Passani - who is also an 'old-timer' in the DE community and someone who has worked with both theoretical and empirical aspects of the research all along. She is therefore very well placed to support, with Pedro, the interactions of the social science WPs with each other and with the other WPs of the project.



Thomas Kurz, Anne English, Antonella Passani, Pedro Bueso, Yongyan Zheng, Sotiris Moschogiannis

There are several important implications that come with the formation of the ICT:

The ICT relieves some of the coordination functions of the PMB. However, it does not take on any of the management functions of the PMB. Hence the choice of name "Team" and not "Board", and the emphasis on "research coordination" rather than "project management".

The ICT is meant to be 'lightweight' in terms of bureaucracy. It is supposed to make running the project easier, not more laborious. Hence, it will not establish complicated formal processes for itself.

The goals, objectives, and responsibilities of the ICT as a whole and of each ICT member are in the process of being clearly defined. This is important in order to be able to define success criteria for this new body and to then report this at the next review.

The operational guidelines for how the ICT interacts with the PMB and with the WP leaders need to be agreed. Again, these will not be formal or rigid, but some guidelines will still be helpful.

News in brief:

WP leadership changes

There have been some changes and clarifications in WP leadership:

The new leader of WP1 is Gerard Briscoe (LSE) since almost all of the natural science research is in WP1. The new leader of WP3 is Amir Razavi (University of Surrey). Lorena Rivera-Leon (T6) became the sole WP11 leader.

New deliverables template

A new template has been constructed for all future deliverables. It addresses the Recommendation from the Second Project Review that an indication is given in deliverable reports of the degree of cross-disciplinary integration and the author details is a part of this. The new template follows the original one except that the 'dependencies' table is now broader in order to include:

- Achievements
- Details on WPs
- Dependences
- Number of PhD involved
- Level of Dissemination of Knowledge (related publications)
- Outstanding Features
- Authors' disciplinary domains

Profile: São Paulo

As you know, São Paulo is home to IPTI. But what else do you know about this fascinating and vibrant city that Saulo Barreto, Renata Piazzalunga, Paulo Siqueira and Fernando Colugnati call home? Here are a few facts you'll find interesting.

As of October 2008, the estimated population of the Municipality of São Paulo was 11,105,249, making it the fifth-largest city in the world; however, the 2008 population estimate for Greater São Paulo is 21,616,060, making it the third largest city in the world (according to IBGE).

Portuguese is spoken in São Paulo, although the language has been influenced by the Lingua Geral of the 16th-century Bandeirantes colonizers, who used a simplified version of the many languages spoken by the indigenous Tupi peoples, as well as Neapolitano Italian, due to large numbers of immigrants from Southern Italy in the early 20th century.

This, among other facts, can be discovered at the Museum of the Portuguese Language, one of São Paulo's many fascinating museums, cultural centers and performing arts venues.

Apart from Italian immigrants and their descendants, São Paulo is also home to millions of Portuguese, Africans, Arabs, Germans, Japanese, Chinese, Jews, Bolivians, Greeks, and Koreans.

São Paulo is not only the financial hub of Brazil, but also of South America, revolving around the Avenida Paulista and the São Paulo Stock Exchange (BOVESPA),

Digital Ecosystems with a Latin American rhythm

Under the [EULAKS](#) project a small OPAALS delegation recently visited Brazil and Argentina where interest in Digital Ecosystems is running high, though with a different cultural perspective.

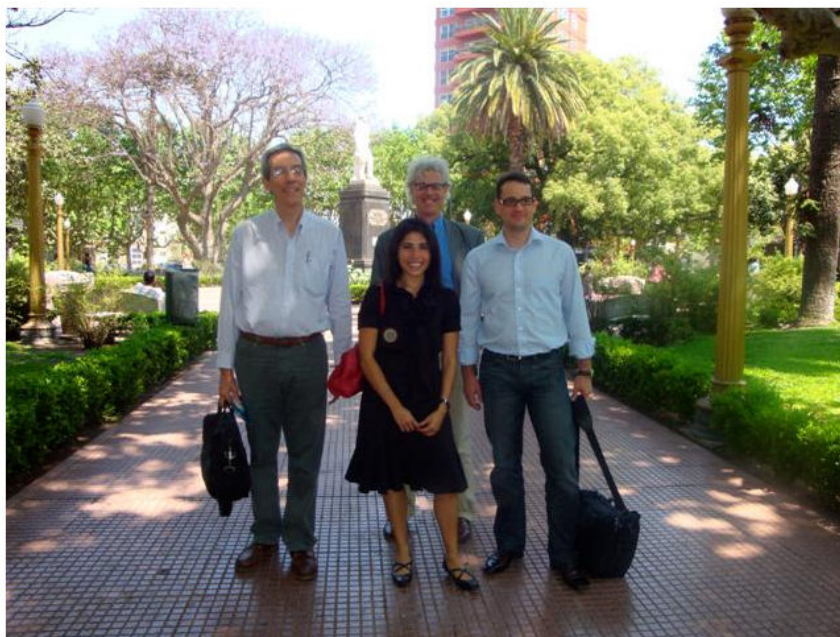


EULAKS is a project funded by the European Community's Cooperation Programme (Socio-Economic Sciences and Humanities) under the Seventh Framework Programme for Research and Technological Development. It connects socio-economic research on the dynamics of the Knowledge Society in the European Union and Latin American and Caribbean Countries.

The OPAALS team from LSE started a research dialogue with the team from the Institute of Industry (IDEI) which is part of the Universidad Nacional de General Sarmiento (UNGS). The Institute generates knowledge on the technological, institutional and territorial aspects of the dynamics of productivity and competitiveness that have an impact on the socio-economic development of Argentina. The IDEI has worked in close collaboration with several institutions in Argentina and abroad, including the ALFA programme of the European Union, and the IFC of the World Bank.

The purpose of the research mission was two-fold. At the theoretical level, the objective was to promote the dialogue on how Digital Ecosystems (DE) research and principles fit the research agenda of the IDEI in order to find research synergies. At the practical level, the aim was to enable discussions on how to develop a methodology to disseminate the DE concept to existing knowledge-intensive sectors in Argentina.

Accordingly, several discussion meetings between the LSE and the IDEI/UNGS, as well as meetings with regional stakeholders in academia and public bodies to discuss dissemination matters, were organized.



(L-R) Jose Borello, Universidad Nacional del General Sarmiento, Argentina, Lorena Rivera-Leon, Paolo Dini, and Dirk Johann, Centre for Social Innovation (Vienna), coordinator of the EULAKS project

In the [document section of the EULAKS website](#) a draft paper by Lorena Rivera and Paolo Dini on "Digital Ecosystems in the EULAKS project: Research context and strategies for the introduction of the DE concept at the regional level" is available for download.

The paper provides a summary of past outputs and current activities of social science research on DEs within the context of EU-funded research, drawing special attention to the DBE and OPAALS projects.

General Meeting a lively success

and beyond

São Paulo is not only the financial hub of Brazil, but also of South America, revolving around the Avenida Paulista and the São Paulo Stock Exchange (BOVESPA), one of the world's largest exchanges

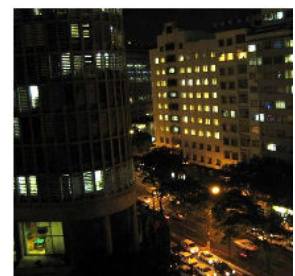
Reflecting this status as a financial powerhouse -- and its often gridlocked traffic -- São Paulo has the world's largest fleet of private helicopters

Not far from IPTI is the Edifício Martinelli (The Martinelli Building), São Paulo's first skyscraper, built by the Italian immigrant-turned-count Giuseppe Martinelli; Martinelli wanted to demonstrate to paulistanos (São Paulo city residents) that urban living was possible, even enjoyable, so he built his own villa atop the building's 34th floor

São Paulo's motto is the Latin *Non ducor, duco*, which reflecting the pioneering and entrepreneurial spirit of the city, means "I am not led, I lead"; São Paulo nickname is "Sampa"

Culturally, São Paulo is noted for its Art Biennial, Fashion Week, Gay Pride Parade, and Festival of Electronic Art, among other events, all of which are some of the biggest of their kind in the world

The city's biggest football teams are Corinthians, São Paulo and Palmeiras, which are also the second, third, and fourth most popular in Brazil; additionally, São Paulo is a finalist to host the 2014 FIFA World Cup



Avenida São Luís at night by Renata Piazzalunga

General Meeting a lively success

An indication of the way we are getting to know each other in depth was the lively flow of discussion across topics and across disciplines during the 2nd General Meeting at LSE, London from 12th - 14th January.

Day one was entirely devoted to plenary sessions on the major subjects, while day two contained parallel and impromptu breakout sessions. The third day was then devoted to computing issues. Major themes were improving the level of integration and demonstrating the degree of interdisciplinary interaction, and progress towards the full OKS implementation.

DAY ONE

INTRODUCTION - Paolo Dini

Paolo updated attendees on the administrative status of the project including Amendment 5 for which approval was awaited and hopefully imminent. This amendment covers the immediate changes necessary for the project to continue as intended. Meanwhile Amendment 6 is currently being drafted to address the changes requested by the reviewers in September. Any other changes should be notified to Paolo and Ilaria as soon as possible for inclusion in Amendment 6.



SOCIAL SCIENCE - Frauke Zeller

Frauke focussed on our pathway to realising the OKS. Starting with software design and the use of metaphors from Social Science, she talked of development methodologies and spiral development, particularly the need to have a first full system in place soon so that it could be studied and improved. The potential disconnect between interface design and back-end design was discussed, and the positive role of 'geeks' in the early stages of implementation.

EVOLUTIONARY AND INTERACTIVE COMPUTING - Paul Krause

Paul talked about the process of 'speciation', giving examples of numerous animals from a few large species (eg. dinosaurs) co-existing with small numbers of many species (birds etc.). It is thought that the diversity of the latter helped them survive the ecosystem changes and meteorite impact event.

In times of stress, such as the current economic climate, many small innovators provide stability and resilience that large 'dinosaurs' can't. Paul postulated that a DE is really a social ecosystem rather than an imitation of a natural ecosystem. He supported this by outlining two 'societal' characteristics of DEs:

- *Modification of behaviour through stored experience, including societal experience (eg. of elders) that enables knowledge in support of survival from occasional events*
- *Intention element – sense of purpose that is lacking in natural ecosystems but is present in social ecosystems*

From the computing domain he gave good news of increasing resources and the intention to have ideas embodied in code and a demonstrator by July.

SOCIAL SCIENCE QUESTIONNAIRE - Frauke Zeller

Frauke introduced the 4th round questionnaire that had been sent to delegates that morning with their personal ID links. She emphasised the importance of the work as the main qualitative and quantitative study of the network's interactions. To ensure a good response time was allowed for the audience to complete the online questionnaires in the meeting.

LUNCH



OKS REQUIREMENTS - Anne English and Thomas Kurtz

Anne and Thomas presented the results of the survey of requirements and priorities (key features). Although there will never be complete consensus on the needs and priorities, there was a good correlation of views and as a result of this survey we have a comprehensive specification of needs and desires that can be matched against contending systems.

Two presentations were given of applications that could form part of the OKS. Saulo Barretto then presented the work of IPTI on 'Guigoh' followed by Miguel Vidal who presented the work of TechIdeas on 'Sironta'.

Rounding off the practical part of the OKS programme, Paolo and Anne led a session discussing the way forward. The need to focus on recommendation R5 from the review was emphasised and the need to have a working OKS by the next review

Renata Piazzalunga then closed the day by presenting her theoretical ideas on the future of the OKS as an interface, based on her PhD work on the 'Architecture of Cyberspace'. Her work on spatial relationships of content and people featured an example of fractals in art, information science, and scale-free networks. She held out the tantalising possibility of collective construction of interface from individual consciousness of the content. In such a vision, the interface is not designed in a fixed way, but continually emerges as a result of interactions.

DAY 2

WP11 BRIDGING DIGITAL ECOSYSTEMS RESEARCH TO REGIONAL DEVELOPMENT AND INNOVATION IN THE KNOWLEDGE ECONOMY - Lorena Rivera-Leon, Chris Van Egeraat, Jo Stanley



Lorena led the discussion by explaining the role of WP11 as a bridge into the 'real world' for Digital Ecosystems. She outlined the mechanisms that we want to study in DEs and highlighted the lack of a fully live DE to study, and how to cope with this.

Chris outlined how the National University of Ireland, Maynooth are studying ways to support specific clusters using DEs, after which Jo talked of her experiences in targeting policymakers in the UK cities of Peterborough and Cambridge. She made the point that many of her targets had no technical expertise and yet the benefits of DE adoption often involves technical understanding – she

argued that there is little material to make the business case 'now' for adoption. She also underlined the importance of communicating concepts clearly, such as 'eternally and fundamentally free' rather than 'free trial'.

WP12 SOCIO-ECONOMIC MODELS FOR DIGITAL ECOSYSTEMS - Maha Sheikh

Maha opened with the changing work plan for Open Source following the departure of Mary, Evangelia, and Panayiota who were concerned with this area. She then went on to the main theme of the major collaborative deliverable D12.1 'Foundations of the Theory of Associative Autopoietic Digital Ecosystems'. Discussion followed on how contributions are progressing and plans for finalisation.

Francesco Botto outlined CreateNet's work for D12.7 on sustainable business models and talked about how to introduce DEs and communicate at all levels within a region, including understanding what aspects can now be introduced to regional economic actors and what can not yet.

Gary Gaughan then talked briefly on Limerick's interesting work with large companies and inner sourcing of mission critical services, followed by Nagaraj Konda who described Birmingham's work on business models and critical success factors and processes that can be re-modelled on DEs.

LUNCH

PARALLEL SESSIONS

The Tuesday afternoon divided into parallel sessions, some of which had been scheduled and others of which were anticipated impromptu meetings for which white spaces had been left in the agenda.

INTEGRATION COORDINATION TEAM

The new team met to discuss their work, in particular:

- Objectives, Levels of Integration
- Roles, reporting, how we operate
- Anchor (per discipline)
- Concrete instances of integration
- Communicate to PMB

Key outcomes of the discussions were:

- Objectives: Integration task should enable the aspirations of each domain and reflect feedback from the last review as well as build on the 'integration' slides prepared for the last review.
- Timeline: To end of project
- Level of granularity: Down to task, focussing on the overall integration and success of the WPs
- Approach: Work with each WP and Task leader to establish integration touch points
- Reporting: via blog to the consortium, mail to PMB and wiki page and weekly/bi-weekly conf calls between the ICT itself. We may also set up Face-to-face workshops with WP/task leaders.
- EC Report out: Presentation at review

DAY 3

Day 3 was devoted to computing subjects discussed by workpackage

WP2

Antonio Margarito from NAICA gave an update on work done and what is still to be done on SBVR. There were discussions on admissibility conditions and on UI SBVR editor.

This was followed by a general discussion on integrating workflow engine into Guigoh.

Ashish Agrawal of IITK showed the SBVR editor and the benefit of structured english vs visual syntax. The SBVR visual editor on sourceforge was demonstrated

<http://www.sourceforge.net/projects/sbvrve>

Still to be done are

- Saving in interchangeable format.
- Add Process related concepts

Overall there is no complete parser to provide all we require.

Paolo Dini asked if it would be possible to integrate some of this into the OKS and Paul Krause responded that this could probably be done in phase III.

Raimund Eder of SUAS gave a demo of SEPLAX

Work done includes:

- *Ajax SBVR editor (prototype)*
- *Integration of NL inspired SBVR parser (UniKassel)*
- *Integration of*
- *Wordnet to support user (SUAS)*
- *Jackrabbit repository for storage and search*
- *SBVR to grails(SUAS)*
- *SBVR to XPD (NAICA)*

There is a plan to integrate the SEPIAX editor into Guigoh via research exchange (SUAS in Brazil) in February. Asked how effective is the parser, Raimund replied that we can try to test the effectiveness, but the parser is limited to relatively simple language. There is a plan to implement some of the ideas developed so far in the next 6 months.

WP5

Miguel Vidal of TechIdeas gave a presentation of Sironta.

Ossi Nykänen of TUT) talked about Phase 2 visualisation, particularly in respect of the OKS. He outlined what was learned from Phase 1 experiences in terms of basic component and design support both bottom up and via interactive GUI visualisation. For Phase 2 he described the visualisation pipeline within the OKS, plus the layer architecture of Wille Phase 2 Visualisation (Pywille2) and initial integration with OKS is via http:REST. Ossi went on to show a pywille2 example and then compared this to an Orange Canvas example.

WP10 - OKS

Mark McLaughlin led a discussion on distributed identity implications for other aspects of the project (eg REST, Transactions, legal bindings etc...).

After lunch there was a detailed discussion of the OKS status and requirements that recognised the need for the interfaces to be clearly defined ASAP.

WP3

Amir Razavi of University of Surrey gave a summary of the wokpackage progress to date and a roadmap of the future. He suggested WP3 meeting in February.

News

Social network meeting

After the OPAALS 2008 conference, a very interesting ad-hoc meeting on social network analysis took place. You can find the notes of the meeting on the wiki:

<http://wiki.opaals.org/SNAMeeting2008-10-08>

Many of the project partners are involved in social networks. The OPAALS-NoE provides the opportunity to share experiences, case studies and to initiate joint projects. We think that a stronger cooperation among the different partners involved in social networks would also contribute to the development of the shared theory of digital ecosystems.

It would be great if the researchers and partners who were not able to participate in the Tampere meeting could contribute with their case studies and expertise and write a very short description on the wiki page. As a result of the meeting, four action points emerged:

- (1) A data mining task force will share knowledge and experiences in data mining for the analysis of knowledge communities. So far, researchers from IITK, TUT and UniKassel are involved in this project.*
- (2) A small study using data from the wiki was initiated. This study is a joint collaboration between TUT and IPTI.*
- (3) The wiki is used for gathering information regarding SNA cases and methods applied by the OPAALS partners in order to share experiences and expertise and to initiate joint projects.*
- (4) All the information and collaborations may be of use for the further development of the OKS.*

Participate in the online social science survey - now!

The fourth and final wave of the OPAALS online survey is underway and the research team invite all OPAALS researchers to participate. The importance of empirical analyses cannot be over emphasised. And this questionnaire represents the only long-term quantitative study within OPAALS.

The study is intended as a longitudinal empirical study in order to map the dynamics in collaboration, communication, and knowledge creation and sharing within our research community. Results from the last waves were presented at the OPAALS 2008 conference in Tampere.

Participation is still very important. For further information on the study please take a look on the wiki:

<http://wiki.opaals.org/Questionnaire>

It will take approximately 20 to 25 minutes to complete.

Emphasis on empirical data – the purpose of the OPAALS survey - Marco Brüner

Currently the fourth and final wave of the OPAALS survey is online. But what is the aim of this study and why does participation matter? In the following two paragraphs we would like to demonstrate - in short - how the community may profit from our research.

OPAALS, as a multi institutional research project, is in a sustainable process of community building. The project's success depends not only on its academic rigor but also on its successful community establishment (which is indeed a sophisticated issue due to the inter- and inner-disciplinary composition of the community members). The geographical dispersion, resulting in the use of ICT for daily collaboration provides opportunities as well as it might cause problems (for example higher coordination costs). These are just a few aspects highlighting the importance of self-reflection as a responsibility for every community member. Only self-reflection, as we would argue, ensures the effective self-governance of the community and provides solid ground for its further thriving and enlargement.

With the help of the OPAALS questionnaire we offer the community survey data on the following important aspects: the perceived appropriateness of collaboration tools, work and decision making processes, the amount of formal and informal interaction, individual community involvement, and the development of inter-institutional networks. Hence, the data provide an empirical ground for the discussion of community building processes and self-governance procedures within OPAALS (e.g. appropriating online communication while acknowledging the importance of face-to-face events). Furthermore, our study results may yield impulses for the design of the OKS. The data are also used in order to conduct secondary analyses, for example social network analysis. In a next step we would like to disseminate the results of our research to a wider academic audience.

OPAALS computing track for IEEE conference

University of Surrey is leading an OPAALS computing track within the 'Cooperation and Connectivity in Digital Ecosystems' theme of the 3rd IEEE Conf. on Digital Ecosystems & Technologies (IEEE-DEST 2009).

Scheduled for 1-3 June 2009, in Istanbul, Turkey this track of the conference focuses on understanding the emerging patterns of interaction and their use in informing the underlying network structures that continuously adapt to strengthen factors which contribute to the sustainability of the participating entities and steer away from those considered as counter-productive.

keynote speakers include:

- Michael Brodie - Verizon Communications, USA
- Peter Palensky - University of Pretoria, South Africa
- Tharam Dillon - Digital Ecosystems and Business Intelligence Institute, Australia
- Mihaela Ulieru - Canada Research Chair, Canada
- Sirin Tekinay - National Science Foundation, USA and Ozyegin University, Turkey
- Simon Carlsen - StatoilHydro, and Stig Petersen - SINTEF ICT
- Dr Alex Talevski - DEBII

Topics of interest include:

- Distributed coordination in multi-service transactions
- Collaborative platforms and systems
- Interaction-based service composition in SOC
- Concurrency control
- Self-organising, biologically-inspired network topologies
- P2P networks in service-oriented environments

The organisers are especially looking for papers that report on:

- Formal models for reasoning about complex interactions
- Applications, case studies and experimental work
- Software frameworks, tools, and methodologies

Contacts

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news by work package

WP1 Automata Theory and Autopoiesis

Clouds - the ultimate abstraction?

Gerard Briscoe and Paolo Dini

The history of computer science and software engineering over the past 50 years can be characterised not only by an increasing level of abstraction in programming languages, but also by an increasing fragmentation of computational units.

Whereas this fragmentation began at the level of code logic (functional sub-units, then classes, etc), with the advent of network computing, GRID, and web applications, also run-time environments have become increasingly distributed. As the size and distribution of web applications increase, the relative import of each participating CPU becomes ever smaller. Our ability to theorise about these creations of software engineering, which are driven by powerful social processes in addition to relying on mathematical theorems and logic, struggles to keep up with their vastness and complexity, with their significance in terms of fundamental computer science concepts, and with their future potential possibilities.

If we view technology, and in particular software, as an extension of our languages, it is clear that its evolution becomes inextricably linked to social constructivist processes that have a lot in common with the intersubjective negotiation that results in a set of user requirements.

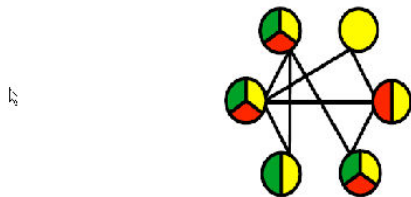
However, software is also subject to non-functional requirements or 'qualities', which are generally transparent to the user and aim to ensure the reliable delivery of the functional requirements. Part of our work in WP1 is inspired by the observation that the computation performed by a biological ecosystem can be conceptualised as a theoretical limit characterised by the number of peers in a distributed P2P architecture approaching infinity, with the amount of traditional computation performed by each approaching zero. As argued by Wegner and co-workers, computation that can be interrupted unpredictably at any point transcends the Turing Machine (but may be expressible by his Choice Machine) and the Von Neumann architecture.

The 'hardware' of the 'computing' performed by Nature is entirely different: it is entirely emergent and almost entirely sub-symbolic and relies on the interactions between any and all of its parts to advance the execution of any of its 'algorithms'. More precisely, the computation performed by biological systems always involves at least two entities, each of which is performing a different, and often independent, algorithm that can only be advanced to its next state by the interaction itself. This is the kernel of the concept of Interaction Computing'. We wish to explore the implications of such a 'vanishing CPU' scenario because by providing a mathematical foundation to building nested and recursively interacting structures it underpins a fundamentally new model of emergent computation that will bring deep repercussions to our understanding of biology and computer science, in equal measure.

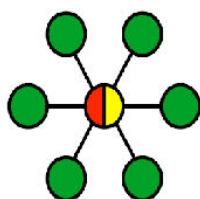
Looking towards the future of computer science, we hope that this new model of computing will allow for dynamic and evolutionary 'service instantiation', with a 'granularity' and 'plasticity' that have not been possible previously - creating algorithms, and therefore computer systems which are self-organising, scalable and sustainable.

This model of computing is also robust and resilient to failure and, if it does occasionally fail, will do so gracefully and non-destructively. A conceptual 'grid computing' model has already been created based around these principles, Community Cloud Computing (C³) developed in collaboration with Alexandros Marinos of Surrey, which will support and require our new model of computation.

Community Cloud Computing (C³) is a paradigm for 'cloud computing' in the 'community', without the dependence of a 'cloud computing' supplier, such as Google, Amazon, or perhaps Microsoft in the future. It will allow for a group of personal computers connected via the internet to provide the facilities of a 'server farm', and collectively form a 'cloud', a 'community cloud'.



Community Cloud Computing - C³



Cloud Computing
(e.g. Google App Engine)

- Resource Consumers
- Resource Providers
- Coordinator

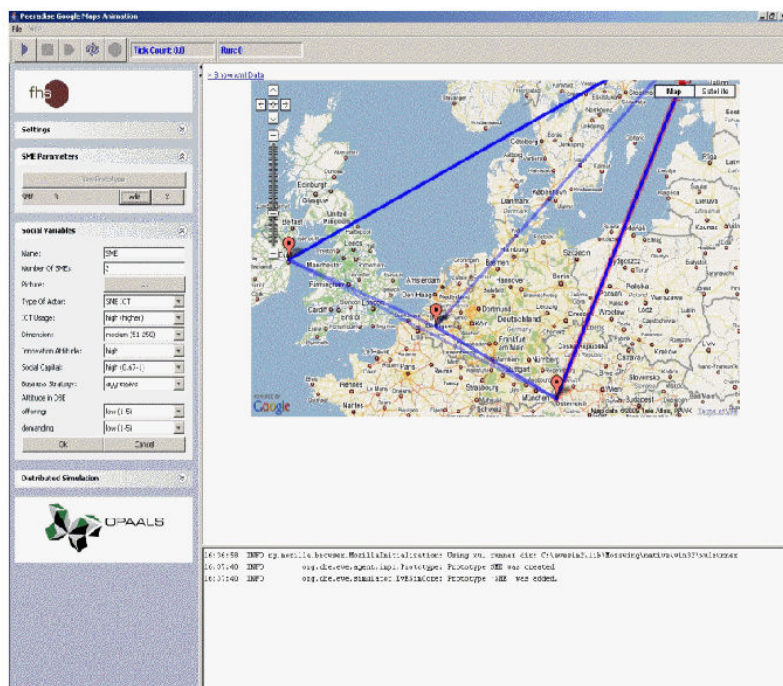
(modified from original by Alexandros Marinos, Surrey)

WP2 Automatic Code Generation From Models

Real-world mapping of networks

by Thomas Heistracher

WP2 mainly aims at studying and prototypically implementing the generation of workflows based on structured natural language. Work was conducted in the recent months to prepare the SEPIAX web editor for integration into Guigoh for the benefit of metadata enrichment of any kind of resources. This will help in classification, clustering and also finding of a variety of knowledge resources. In this time, the EvESim was transformed to a fully distributed and service-based version (code-deliverable D3.5) to facilitate real-world emulations. The visualization component was extended to now utilize Google Maps for network topology representation. In context with this ongoing work, two research exchanges to partner IPTI are under preparation.



Visualization component utilizing Google Maps for network topology representation

WP3 Autopoietic P2P Networks

Relationships bear P2P fruit

by Paul Krause

Implementation of the WP3 peer-to-peer (P2P) architecture is proceeding well, with a close working relationship having been developed between Surrey University in the UK and IPTI in Brazil. Support for long-term transactions is an integral part of the P2P architecture, but it turns out that the WP3 transaction model has much wider application.

Representational State Transfer (REST) is a distributed computing paradigm that was first defined in 1999 by Roy Fielding in his PhD dissertation as a formal description of an architectural style that had emerged in the World Wide Web. REST focuses on resources identified by names, a fixed number of methods with known semantics to manipulate those resources, hypermedia as a means of traversing the resources and statelessness in the interactions between client and server.

REST, especially over the HTTP protocol, has long been championed as a competing web service paradigm to the WS- stack. However, it has only recently begun to be more seriously considered with the publication of a number of high-profile handbooks, and the apparent complexity and lack of adoption for WS-* technologies beyond the corporate firewall.*

REST has gained traction in addressing many common use cases for distributed systems. As is common with disruptive technologies, REST over HTTP is evolving to compete with WS- in increasingly advanced usage scenarios. Work in WP3 promises to be to be part of the next wave of REST evolution by defining a RESTful transaction model that is designed to operate over HTTP. Our initial work on this has been accepted for poster presentation at the 18 th International World Wide Web Conference at Madrid in April this year. This is a very satisfactory result given the intense competition amongst submissions for this very high-profile conference.*

WP4 Distributed Accountability Identity And Trust

This WP has now been incorporated into WP12

WP5 Integration With DE Infrastructure

The broken promises of Globalization

by Jesús E. Gabaldón

Globalisation has allowed many countries to go further and far more quickly than they would otherwise have done. Low-paying jobs in developing countries provided by some large international companies may be regarded in the west as mere exploitation, but working for these companies may be regarded as a much better option than staying in the countryside and growing rice. Indeed, depending on the absolute and relative profit by the large enterprises this situation may still exacerbate the inequalities between the developing and developed countries.

The jobs in the third world, as well as in the first and second ones, are often organised in more or less structured groups of companies of different sizes, ranging from very small to mid size, and even some large companies. Most of them, however, are what we can call SMEs. Especially in developing countries, these companies cannot access the technological tools and facilities that the larger ones can. However, when the companies have the time necessary to get organised, their ensuing structure closely resembles that of a natural ecosystem.

How SMEs can benefit from the Digital Ecosystem's philosophy?

One of the main characteristics of structured communities as compared to unstructured ones is their ability to communicate with other entities, as well as to receive accurate information from the socio-economic environment. Both things may help anticipate business opportunities and negative conditions thus providing opportunities of growth and survival.

Despite some naive misconceptions, self-organisation does not spontaneously appear per se from scratch. On the contrary, it is necessary to provide adequate conditions; in the same way that seed does not germinate without water, and do not grow beyond the initial stage without mineral salts and some oligoelements.

It is necessary to provide at least a minimal technological basis in order to trigger social and economic development. This initial technological infrastructure must not handicap the growth, independent of expensive proprietary software policies.

Technological trends in Digital Ecosystems

Interdisciplinary research in some fields is helping immensely in far away fields. In a similar way to how viruses quickly and effectively spread by using the complex cellular machinery of the host population, SMEs can benefit from the infrastructures deployed by large enterprises and public bodies. Such infrastructures, like Internet, are often expensive and complex, but they can benefit both large and small companies. What really makes a difference is preserving the asymmetry in the distribution of information and resources; in essence, access to and control of information.

Therefore, usually the cleverest approach by SMEs is to take advantage of the present technological infrastructures, instead of trying to develop and deploy their own ones from their own resources and technologies. These infrastructures already exist; they have been developed to help large holdings, trusts, and even public administrations to grow and consolidate their internal organisation. In spite of some attempts at control of information, these technological infrastructures are now widely spread out and democratised. In this way, the use of standards initiatives and open source software technologies will ensure that anyone, at least in the short term, has the possibility to enjoy almost the same facilities that just a few years ago were only accessible to a few large international companies.

*OPAALS is making significant progress in the development of telecommunication technologies by broadening access for SMEs in a wide spectrum of countries, from the third to the first world, by giving them access to complex technological communication tools, and providing distributed collaborative applications on its Open Knowledge Space such as **Sironta** (<http://www.sironta.com>). Sironta is based on standard protocols and technologies like OSGi and XMPP, enabling the latter a direct access to public network layers such as Google Talk (Jabber), etc. This strategy has enabled the fast growth of successful ICT initiatives like **Skype**, in that they use the already available telecommunication networks and infrastructures.*

WP6 Socio-Economic Constructivism And Language

Illustrating metaphor usage from OPAALS data

by Oxana Lapteva

WP6 focuses on linguistic analysis of textual data by using natural language processing techniques. Started with investigations on metaphors, their complexity and role in communication in Phase I, we continue this research and developing a Metaphorological Tool Kit, whose purpose is to illustrate the metaphor usage in sciences based on the OPAALS data. Furthermore, the general role of semantics in digital environments is considered. Additionally, Metaphorological Tool Kit is meant to be a platform for linguistic analysis and natural language processing.

The first step was collecting, testing and analysing different tools for data preprocessing and statistical analysis. At the current state of research our focus lies on integrating and testing two types of parsers: based on constituency and dependency grammars. Constituency grammar describes the syntactical structure of the sentences in terms of phrasal hierarchies. By contrast, dependency grammars focus on the direct relations between words in a particular sentence (see Deliverable 6.4 for more detail).

Integrating parser based on dependency grammar is a promising approach for bridging the gap between natural language and some formal representations (e.g. SBVR, ontologies). Important characteristic of dependency grammar is the identification of the relationships between concepts and attributes of a particular concept. The reason is its ability to discover head-based relations (e.g. verb as a head) and functional categories (e.g. subject, direct object, complement of a preposition, and others).

Our activities in this area of research involve a close collaboration with SUAS and TUT teams. Dependency grammar can be an important extension to the SBVR-editor. Collaboration with Tampere team includes different aspects: linguistic analysis and its role in ontologies (e.g. linguistic analysis and the problem of discovering the core units such as concepts, properties and relationships in ontology), extraction and visualization of information from the unstructured textual data.

Another important aspect of our work with TUT and SUAS is our research on Evolutionary Framework for Language. UniKassel team focuses on aspects of natural language change and variation and their impact on Digital Ecosystems. This collaborative research leads to establishing and strengthening the link between computer science, linguistics and their visions on language dynamics and formal representations of knowledge in digital environments.

WP7 Community Networks And Digital Ecosystems

This WP has now been incorporated into WP11 and WP12

WP8 Open Source And Open Knowledge

This WP has now been incorporated into WP12

WP9 Communication And Dissemination

Focus on monitoring and external dissemination

by Neil Rathbone

The feedback from the review was very positive, with just two significant comments that we need to widen the audience outside the DE community and monitor the distribution of communications.

Tasks update

Work is in progress on completing the identity, based on what the network has now become. This will focus on a textual document to complement the graphical document and will serve as an induction document for new members, as well as a reflection on the ethos and nature of OPAALS as a Network of Excellence.

The second annual conference was held in November and the proceedings are on the Wiki at

http://wiki.opaals.org/WP9_Communication_And_Dissemination

The cooperative article system design, deliverable D9.8 is in draft form for approval.

The paper on Best Practice in Communication and Dissemination in research networks' is in progress, contributions welcome.

Several Network Exchanges are in the pipeline. We intend to make a more formal reporting template for future projects to make the reports of outcomes more consistent.

WP10 Sustainable Community Building

Moving along several threads

by Paolo Dini

WP10 is moving steadily onwards along several threads:

Requirements have been sought from project partners to make the usage scenarios of the application layer the result of a consensus process as much as possible. This works builds on D10.5 and extrapolates towards formalisable collaborative knowledge generation processes.

Consensus around the architecture is slowly progressing; we have now reached agreement on a JXTA infrastructural layer with a RESTified interface for the upper layers.

The DE Appliance is nearing completion, along with the tagging tools and the semantic repository.

A distributed persistence layer is being sought; alternatives are being assessed and will be integrated with the rest of the architecture.

The online working paper series publishing tool is 2/3 completed.

The online conferencing tool is suffering from a delayed implementation of the P2P infrastructure, due to the delay in amendment processing and acceptance.

Monitoring of the empirical activities within the project is progressing smoothly. The wiki contributors network dataset is available and is under analysis by the SNA group. OPAALS surveys, further to exploratory analysis, will be modelled as dynamic network at least in the level of institutions for the collaboration and communication among them.

The integration of the EveSim and of the social networks visualisation is taking shape. A research exchange of two SUAS researchers will take place in Brazil in February to model the geographic visualizations and to start new features in Evesim giving more "social flexibility" in the definition of agents, using social variables.

A new dimension for the conceptualisation of the OKS has been identified in addition to the project's disciplinary domains and will play an important part in the design and development of the "OKS As Interface": artistic expression. From the dynamic of collaborations in a knowledge network, that usually follows a Scale-free network model, a new concept of dynamic interface is under research.

We are aiming for a first centralised version of the OKS by February, and by May we are going PUBLIC!!!

WP11 Bridging DE Research to Regional Development and Innovation

Case studies a hit inside and outside OPAALS

by Lorena Rivera León

The last months have been busy and full of activities for WP11 partners.

The first results of WP11 research got materialised in Deliverable 11.1, positively received within the project through the internal review process, and externally by the EC's reviewers.

The 2nd year project review was a gateway for communicating the WP research agenda internally and externally. The Indian case studies and research developed by IITK were several times congratulated by the EC's reviewers for its clarity, applicability and potentiality; setting themselves as a reference point within OPAALS.

Several activities of dissemination of the Digital Ecosystems approach for sustainable development have occurred outside the OPAALS community: with regional policy makers in the United Kingdom (Cambridge area), mainly through the outstanding effort of Dr. Jo Stanley (CAM); and with regional and local decision makers in Brazil, through an OPAALS research mission in which I took part. Additionally, there is a big possibility that Dr Runa Sarkar (IITK) will be presenting preliminary research results (T11.3 and T11.4) in an international conference in Germany in the next months.

We are in a period of light adaptation of the way we communicate our research in official reports and to a wider audience; focussing mostly in decision makers, policy makers, and social science researchers. A new Milestone, M11.12, has been proposed as a tool for making more explicit the linkages between WP11 partners' research and Digital Ecosystems for development with a focus on policy implications.

The following months will be certainly busier, bringing tangible final results from our research.

WP12 Socio-economic Models for Digital Ecosystems

Closer working for synergy on socio-economic models

by Maha Shaikh

Most tasks in this workpackage revolve around the application of theoretical ideas to the development of socio-economic models and understandings, with some empirical input, thus leading to a better understanding of both practice and theory.

WP12 is an integrative workpackage that is working towards bringing together diverse but highly linked concepts of community currency, business models, open source business models, inner source adoption by firms, governance of digital ecosystems and the knowledge produced, and how digital business ecosystems build and sustain trust.

The recent general meeting at the LSE was a very useful event because members of different workpackages were able to get a better sense of the progress overall. WP12 and 11 leaders met and had a very constructive conversation about how their work was coming together very nicely. There is a desire on both sides to work even more closely together because we see potential for synergy. The overall progress of WP12 is good.