

Project website address: sqig.math.ist.utl.pt/GeTFun

> Please indicate if the project
(a) has fully achieved its objectives and technical goals for the mid-term period

(1) GENERAL PROGRESS OF THE PROJECT

> Description of the modifications

None.

> Qualitative indicators of progress and success in line with workplan and milestones (description of progress towards the milestones and deliverables)

Two milestones were set for the year 2013, both successfully accomplished according to the workplan. Each has a corresponding deliverable, which can be found inside this report.

MS1 – the organization of the project's first workshop

The workshop was successfully held along with a major event, the 4th World Congress and School on Universal Logic (UniLog 2013), on April 3–4, 2013 in Rio de Janeiro, Brazil.

Details can be found inside this report, and on the webpage sqig.math.ist.utl.pt/GeTFun/1.0

MS2 – the fulfillment of scientific goals corresponding to Tasks A1, C1, G1, J1

All four tasks, corresponding to the core work packages of the project, were successfully completed. Moreover, all the relevant scientific results concerning these tasks were internationally published in specialized scientific journals and books. Details can be found inside this report.

Relevant progress has also been reported on all other work packages of the project, leading to a total number of 63 publications.

(2) PROJECT ACHIEVEMENTS

> Scientific highlights and research achievements

Expectedly, in the course of 2013, there was considerable scientific activity in all WPs of the GeTFun project, in some cases ahead of the deadlines. Of course, some work was particularly targeted at the tasks of the core WPs (WP-A, WP-C, WP-G, WP-J), namely at Tasks A1, C1, G1, J1 which were due at the end of 2013 and whose accomplishments we detail below.

WP-A: Algebraic valuation semantics

The foundational work on WP-A was mainly developed at IT-Portugal

and published in [19]. The article covers Task A1, as explained below, but also raises questions about subsequent developments. Namely, with respect to Task A2, it is expected that some bridges with the work in WP-C and WP-G may be useful.

Task A1

Identify and investigate the algebraic properties of a suitable notion of abstract valuation semantics, and subsequent development of bridge results with logics within the behavioral algebraization hierarchy.

The abstract of article [19] is sufficiently clear about the fulfillment of this task:

“We define and study abstract valuation semantics for logics, an algebraically well-behaved version of valuation semantics. In the context of the behavioral approach to the algebraization of logics, we show, by means of meaningful bridge theorems and application examples, that abstract valuations are suited to play a role similar to the one played by logical matrices in the traditional approach to algebraization.”

WP-C: Controlled non-determinism: metalogical properties

The work on WP-C was mainly developed at TAU-Israel, TU-Wien-Austria and IPI-PAN-Poland and published in [3-6,26,36-39]. The work covers Task C1, as explained below, but also parts of Task C2. In parallel, the work [18] reported in WP-G also covers related material, using tableaux instead of hypersequent systems.

Task C1

Extend the procedures and results to hypersequential systems, and investigate more general notions of analyticity and their semantic characterizations.

The abstracts of articles [6]:

“We define a general family of canonical labelled calculi, of which many previously studied sequent and labelled calculi are particular instances. We then provide a uniform and modular method to obtain finite-valued semantics for every canonical labelled calculus by introducing the notion of partial non-deterministic matrices. The semantics is applied to provide simple decidable semantic criteria for two crucial syntactic properties of these calculi: (strong) analyticity and cut-admissibility. Finally, we demonstrate an application of this framework for a large family of paraconsistent logics.”

and [36]:

“We identify a large family of fully structural propositional sequent systems, which we call basic systems. We present a general

uniform method for providing (potentially, nondeterministic) strongly sound and complete Kripke-style semantics, which is applicable for every system of this family. In addition, this method can also be applied when: (i) some formulas are not allowed to appear in derivations, (ii) some formulas are not allowed to serve as cut formulas, and (iii) some instances of the identity axiom are not allowed to be used. This naturally leads to new semantic characterizations of analyticity (global subformula property), cut admissibility and axiom expansion in basic systems. We provide a large variety of examples showing that many soundness and completeness theorems for different sequent systems, as well as analyticity, cut admissibility, and axiom expansion results, easily follow using the general method of this article.”

are sufficient to establish the fulfillment of this task.

WP-G: Many-valuedness meets bivalence

The work on WP-G was mainly developed at IT-Portugal, UFRN-Brazil and UNIVR-Italy and published in [18]. The article covers Task G1, as well as parts of Task G2, and brings about connections with the results in WP-C.

Task G1

Investigate the ways in which modularity can be explored from the bivalent viewpoint and abstract away the principles behind the complexity measures and corresponding proof in order to cover also other finite-valued reductions and logics presented by way of infinite-valued semantics.

The abstract of article [18] clarifies the fulfillment of this task:

“The paper is a contribution both to the theoretical foundations and to the actual construction of efficient automatizable proof procedures for non-classical logics. We focus here on the case of finite-valued logics, and exhibit: (i) a mechanism for producing a classic-like description of them in terms of an effective variety of bivalent semantics; (ii) a mechanism for extracting, from the bivalent semantics so obtained, uniform (classically-labeled) cut-free standard analytic tableaux with possibly branching invertible rules and paired with proof strategies designed to guarantee termination of the associated proof procedure; (iii) a mechanism to also provide, for the same logics, uniform cut-based tableau systems with linear rules. The latter tableau systems are shown to be adequate even when restricted to analytic cuts, and they are also shown to polynomially simulate truth-tables, a feature that is not enjoyed by the former standard type of tableau systems (not even in the 2-valued case). The results are based on useful generalizations of the notions of analyticity and compositionality, and illustrate a theory that applies to many other classes of non-classical logics.”

WP-J: Truth-values

The foundational work on WP-J was mainly developed at KDPU-Ukraine and published in [12,61,62]. The articles cover Task J1, and opens the way for subsequent developments.

Task J1

Elaborate the notion of a generalized truth-values function with respect to several basic sets of initial truth-values, vis-a-vis applications to important non-classical logics, such as intuitionistic, modal and fuzzy logics formalized by means of suitable proof systems (e.g., axiomatic, sequent, tableaux, natural deduction).

The abstract of article [62] illustrates the fulfillment of this task:

“We explore a possibility of generalization of classical truth values by distinguishing between their ontological and epistemic aspects and combining these aspects within a joint semantical framework. The outcome is four generalized classical truth values implemented by Cartesian product of two sets of classical truth values, where each generalized value comprises both ontological and epistemic components. This allows one to define two unary twin connectives that can be called “semi-classical negations”. Each of these negations deals only with one of the above mentioned components, and they may be of use for a logical reconstruction of argumentative reasoning.”

Other WPs

Notwithstanding, there was also notable progress on the applicational WPs (WP-B, WP-D, WP-H, WP-I), and also moderate progress already on the enabling WPs (WP-E, WP-F), albeit not necessarily targeted at the planned Tasks, which are only due at the end of 2014. Succintly, mentioning only material already published or accepted for publication, we have:

- WP-B: Curry-Howard proof-systems and focusing references [17,29,34,35,44,45,47-49,50,63]
- WP-D: Distance-based reasoning references [2,8,11,60]
- WP-E: Information sources references [16]
- WP-F: Labeled deductive systems references [20,21,23,30]
- WP-H: Non-determinism and premaximal consistency references [3]
- WP-I: Semantics-informed proof theory of modal and fuzzy logics references [5,7,9,10,21,24,25,27,28,30,33,36,37,40-42,51,52,53,55-59]

> Transfer of knowledge and training activities

First GeTFun Workshop

The First GeTFun Workshop was set as the first milestone (MS1) of the project. It was organized, as planned, jointly with a major event, as a two day event at the 4th World Congress and School on Universal Logic (UniLog 2013), held in Rio de Janeiro, Brazil, in mid-2013. It served as a forum for project participants to get to know each other and their work better, to plan secondments and collaborations, but also as a communication point with the community working in logic, in general, and the topics of compositionality of meaning in particular. A brief report can be found below.

The First GeTFun Workshop was advertised as:

Compositional Meaning in Logic [GeTFun 1.0]
April 3-4, 2013

The workshop was organized by Carlos Caleiro (IT, Portugal) and João Marcos (UFRN, Brazil). The call for papers, inspired by the project summary is shown below:

The Fregean-inspired Principle of Compositionality of Meaning (PoC), for formal languages, may be construed as asserting that the meaning of a compound expression is deterministically (and often recursively) analysable in terms of the meaning of its constituents, taking into account the mode in which these constituents are combined so as to form the compound expression. From a logical point of view, this amounts to prescribing a constraint – that may or may not be respected – on the internal mechanisms that build and give meaning to a given formal system. Within the domain of formal semantics and of the structure of logical derivations, PoC is often directly reflected by metaproperties such as truth-functionality and analyticity, characteristic of computationally well-behaved logical systems.

The workshop GeTFun is dedicated to the study of various well-motivated ways in which the attractive properties and metaproperties of truth-functional logics may be stretched so as to cover more extensive logical grounds. The ubiquity of non-classical logics in the formalization of practical reasoning demands the formulation of more flexible theories of meaning and compositionality that allow for the establishment of coherent and inclusive bases for their understanding. Such investigations presuppose not only the development of adequate frameworks from the perspectives of Model Theory, Proof Theory and Universal Logic, but also the construction of solid bridges between the related approaches based on various generalizations of truth-functionality. Applications of broadly truth-functional logics, in their various guises, are envisaged in several areas of computer science, mathematics, philosophy and linguistics, where the ever increasing complexity of systems continuously raise new and difficult challenges to compositionality.

The workshop welcomes submissions on all topics related to compositionality of meaning in logic, and in particular to issues

connected to generalizations of metalogical notions such as:

- truth-functionality
- nondeterminism in semantics
- logical bivalence vs algebraic many-valuedness
- analyticity
- subformula principle and complexity measures
- semantic effectiveness and decision procedures for non-classical logics
- cut-free vs cut-based proof formalisms
- proof strategies and proof-search
- modular logical specification formalisms
- rule invertibility, structurality and logical harmony

Submissions should consist of an abstract of up to 1,000 words, sent by email before 1st Dec 2012 to the Gmail account: getfunw.

The workshop occurs within the scope of the Marie Curie EU FP7 IRSES project GetFun.

As keynote speakers, invited by the organization, there were 3 project members, and additionally an international expert in the field.

- Agata Ciabattoni (TU Wien, AT)
Analytic calculi for non-classical logics: The Baha'i method
- Edward Hermann Haeusler (PUC-Rio, BR)
Universality, naturality and logical systems
- Beata Konikowska (IPI PAN, PL)
From non-deterministic semantics to ordinary Gentzen sequent calculi
- Heinrich Wansing (RUB, DE)
Falsification, natural deduction, and bi-intuitionistic logic

The workshop counted also with 15 contributed talks, by members of the project, but also by researchers from other institutions interested in the proposed research topics.

- Ofer Arieli (MTA, IL) and Anna Zamansky (TU Wien, AT)
A dissimilarity-based approach to handling inconsistency in non-truth-functional logics
- André Bazzoni-Bueno (UNIV-PARIS1, FR)
A theorem on compositionality and recursion
- Benjamín Bedregal and Regivan Santiago (UFRN, BR)
Toward a nondeterministic fuzzy logic
- Carolina Blasio (UNICAMP, BR) and João Marcos (UFRN, BR)
Do not be afraid of the unknown
- Thomas Macaulay Ferguson (CUNY, US)
On the correctness of the Thomason embedding

- Casper Hansen (ABDN, UK)
Alternative supervaluation for Kripke's theory of truth
- Ingolf Max (UNI-LEIPZIG, DE)
(Non-)Compositionality in many-valued and two-dimensional logics
- Ori Lahav (TAU, IL) and Anna Zamansky (TU Wien, AT)
Finite-valued semantics for canonical labelled calculi
- Manuel A. Martins (UA, PT) and George Voutsadakis (LSSU, US)
Malinowski modalization and the Leibniz hierarchy
- João Marcos and Sanderson Molick (UFRN, BR)
The mystery of duality unraveled --- dualizing rules, operators, and logics
- Mykola S. Nikitchenko and Stepan S. Shkilnyak (KNU, UKR)
Developing a hierarchy of composition-nominative logics
- Elaine Pimentel (UFMG, BR), Vivek Nigam (UFPB, BR), Carlos Ramirez and Julian Lopez (JAV-CALI, CO)
On logical harmony, sequent systems and modality
- Giselle Machado (TU Wien, AT), Vivek Nigam (UFPB, BR) and Elaine Pimentel (UFMG, BR)
A framework for specifying and reasoning in sequent calculus systems
- Marcos Silva (UFC, BR)
The Tractarian collapse: On contradictions, nonsenses, mutilated truth-tables and limits of truth-functionality
- Daniel Skurt (UNI-LEIPZIG, DE)
Suszko-reduced logics and truth-functionality

Further details, as well as the workshop schedule, can be consulted at the webpage sqig.math.ist.utl.pt/GeTFun/1.0

Student supervision

On the subject of supervision of students, one should also mention that:

- Master student Carlos Silva at IST, U Lisboa, Portugal is being supervised by C. Caleiro (IT) on topics related to WP-G.
- Agata Ciabattoni is supervising two students on topics related to the GetFun Project, Lara Spendier and Paolo Baldi, at TU-Wien.
- MSc student Adriano Dodó at UFRN, Brazil was supervised by J. Marcos on topics related to WP-I. Thesis concluded [20].
- PhD student Carlos Ernesto Ramirez is being supervised by Elaine Pimentel (UFRN) on topics related to the project.
- Students Ori Lahav, Liron Cohen and Yoni Zohar supervised by Arnon Avron (TAU), on topics of the project.

- Several students are being supervised by E.H. Hauesler and L.C. Pereira at PUC-Rio, Brazil, on topics related to GeTFun.

> Dissemination of results

Talks

Broadcasting the results of GeTFun focused research, in many cases in collaboration with partner institutions within the project, sometimes work in progress, project members have delivered close to 50 talks on relevant research topics, in international conferences, conferences and workshops.

- C. Blasio, C. Caleiro and J. Marcos. On B-entailment. Logic Colloquium 2013, Evora, Portugal, 2013.
- P. Baltazar, C. Caleiro and S. Marcelino. Conservativeness and decidability of fibred logics. Logic Colloquium 2013, Evora, Portugal, 2013.
- C. Caleiro and J. Ramos. Classical and intuitionistic propositional logic. Logic Colloquium 2013, Evora, Portugal, 2013. 4th World Congress and School on Universal Logic, Rio de Janeiro, Brazil, 2013.
- C. Caleiro and S. Marcelino. Combining logics, cryptofibred semantics and completeness preservation. 4th World Congress and School on Universal Logic, Rio de Janeiro, Brazil, 2013.
- A. Ciabattoni, "Automated Support for the Investigation of Paraconsistent and Other Logics". LFCS, San Diego, USA, January 2013.
- A. Ciabattoni, "Analytic calculi for non-classical logics: The Baha'i Method", invited talk at the Getfun workshop, Rio de Janeiro.
- A. Ciabattoni, "Power and Limits of Structural Rules", invited talk at the LIX Colloquium 2013: The Theory and Application of Formal Proofs, Paris, France 4-7 November 2013.
- A. Ciabattoni, "Analytic calculi for non-classical logics: The Baha'i Method", invited talk at the Tenth Tbilisi Symposium on Language, Logic and Computation. Gudauri, Georgia, September 23 to 27, 2013.
- G. Reis "Checking proof transformations with ASP", Contributed Talk at ICLP 2013 - Istanbul, Turkey, 24-29 August 2013.
- G. Reis "A framework for specifying and reasoning in sequent calculus systems", UNILOG -- Getfun workshop.
- L. Spendier "Hypersequent and Labelled Calculi for Intermediate Logics", Contributed Talk at TABLEAUX 2013: Nancy,

September 16–19, 2013.

- L. Spendier "Automated Support for the Investigation of Paraconsistent and Other Logics. Contributed Talk at UNILOG, Session "Tools", Rio de Janeiro, April 3–7, 2013.
- A. Zamansky "Non-deterministic Matrices" (UNILOG, invited tutorial).
- A. Zamansky "Distance-Based Inconsistency Management" (UNILOG, Getfun workshop).
- J.Marcos and A. Dodó. "A rich language for negative modalities". Workshop on Intuitionistic Modal Logics and Applications, 2013.
- J.Marcos and C. Blasio. "Do not be afraid of the Unknown", Workshop GetFun 1.0, 2013.
- J.Marcos and C. Callejas. "A contribution towards a cartography of fuzzy equivalence operators", Workshop on Many-Valued Logics, 2013.
- J. Marcos and S. Molick. "The mystery of duality unraveled: dualizing rules, operators, and logics", Workshop GetFun 1.0 & Logic Colloquium 2013.
- Valeria de Paiva. On a constructive modal logic of time and verification. IMLA 2013, Rio de Janeiro, Brazil.
- Valeria de Paiva. Constructive Modal Logics once Again. II Workshop on Logic and Semantics, 2013.
- Valeria de Paiva, C. Morgan and S. G. da Silva. Natural Numbers Objects in Dialectica Categories, 8th Workshop on Logical and Semantic Frameworks, LSFA 2013.
- Elaine Pimentel. Relating Focused Proofs with Different Polarity Assignments. Logical Frameworks and Meta-Languages: Theory and Practice, Boston, USA, September 2013.
- Elaine Pimentel. Mobile links in Concurrent Constraint Programming. LSFA, São Paulo, Brazil, September 2013.
- Elaine Pimentel. A General Proof System for Modalities in Concurrent Constraint Programming. CONCUR, Buenos Aires, Argentina, August 2013.
- Elaine Pimentel. Relating Focused Proofs with Different Polarity Assignments. Workshop on Abstract Proof Theory, UNILOG, Rio de Janeiro, Brazil, April 2013.
- Elaine Pimentel. Logical Harmony, Compositional Meaning in Logic, GetFun 1.0, UNILOG, Rio de Janeiro, Brazil, April 2013.

- Ori Lahav. From Frame Properties to Hypersequent Rules in Modal Logics, LICS 2013. Kleene Award for Best Student Paper.
- Arnon Avron and Anna Zamansky. A tutorial on non-deterministic semantics, Unilog 2013.
- Liron Cohen. Ancestral logic. Workshop on "Between First and Second Order Logic", Unilog 2013.
- Ori Lahav. Semantic Investigation of Basic Sequent Systems. Workshop on Abstract Proof Theory, Unilog 2013.
- Ori Lahav, Anna Zamansky Finite-valued Semantics for Canonical Labelled Calculi. Compositional Meaning in Logic, GetFun 1.0, Unilog 2013.
- Luca Viganò. Formal methods for the security of the Internet of Services, invited talk, IMLA Workshop, UNIOLOG 2013.
- Marco Volpe, Carlos Caleiro and L. Viganò. Labeled natural deduction for Peircean branching temporal logics, UNIOLOG 2013!
- Marco Volpe, Carlos Caleiro and L. Viganò. A labeled deduction system for the logic UB, TIME'13, Pensacola (USA), September 2013.
- Heinrich Wansing and Yaroslav Shramko. Truth-Values, tutorial on the 4th World Congress and School on Universal Logic, Brazil, 2013.
- Yaroslav Shramko. Logic and Values, Philosophy and Logic – 2013, International Workshop.
- Yaroslav Shramko. A modal translation for dual-intuitionistic logic, 8th Smirnov's Readings in Logic, Moscow, June 2013.
- O. Arieli and A. Zamansky. A dissimilarity-based approach to handling inconsistency in non-truth-functional logics. UNIOLOG, Rio de Janeiro, April 2013.
- M. Martins and G. Voutsadakis. Malinowski Modalization and the Leibniz Hierarchy, UNIOLOG 2013.
- Jean-Yves Béziau. Philosophy, Logic and Mathematics – The place of philosophy of science, University of Lisbon, 2013.
- Jean-Yves Béziau. Non Truth-Functional Semantics. Logic and Computation Seminar, IST, U Lisboa, 2013.
- Jean-Yves Béziau. What is and is not logically obvious, Logic in Question III, May 2–3, 2013, Paris, France.

- Jean-Yves Béziau. Possible worlds : a Fashionable Nonsense? 23rd World Congress of Philosophy, August 04-10, 2013, Athens, Greece.
- Jean-Yves Béziau. Universal Logic : a New perspective for Logic Research, Seminar of the Dept of Philosophy of Science of the University of Athens, Greece, August 12, 2013.
- Jean-Yves Béziau. Paraconsistent logic from A to Z. Logic Seminar CLE, UNICAMP, Brazil, 2013.
- Jean-Yves Béziau. Towards an Encyclopaedia of Logic. Seminar Logic in Rio, Rio de Janeiro, Brazil, November 25, 2013.
- Fagner Santana and Regivan Santiago. Toward a Notion of i-distance-based reasoning, Unilog 2013.
- Regivan Santiago and Benjamin Bedregal. Toward a non-deterministic Fuzzy Logic, Unilog 2013.

Publications

Over the course of 2013, the GeTFun project had 44 articles published or accepted for publication in international scientific journals of the area. Publications in 2013 included also 9 other papers in serials and book chapters with international peer review on the topics of GeTFun, as well as 7 papers in international conference proceedings. Members of the project have also edited 2 scientific volumes, and supervised 1 MSc thesis on GeTFun related subjects.

Emphasis should be put on the fact that, already in the first year of the project, 10 of these publications are coauthored by project members coming from more than one GeTFun participant institution, which highlights the merits of the collaboration provided by the project.

Additional information can be found at the project web page in sqig.math.ist.utl.pt/GeTFun/publications/

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[2] Ofer Arieli and Anna Zamansky: A Dissimilarity-Based Framework for Generating Inconsistency-Tolerant Logics. To appear in Annals of Mathematics and Artificial Intelligence.

[3] Arnon Avron. Paraconsistency, Paracompleteness, Gentzen Systems, and Trivalent Semantics. To appear in the Journal of Applied Non-

Classical Logic.

[4] Arnon Avron, Beata Konikowska, Anna Zamansky: Cut-free sequent calculi for C-systems with generalized finite-valued semantics. *J. Log. Comput.* 23(3): 517–540 (2013).

[5] M. Baaz and A. Ciabattoni. Proof theory of witnessed Goedel logic: a negative result. Accepted for Publication in *Journal of Logic and Computation*, 2013.

[6] Matthias Baaz, Ori Lahav, Anna Zamansky. Finite-valued Semantics for Canonical Labelled Calculi. *J. Autom. Reasoning* 51(4): 401–430 (2013).

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[16] J.-Y. Beziau, "Paraconsistent Logic and Contradictory Viewpoints", *Revista Brasileira de Filosofia*, 2013.

[17] I. Cafezeiro, J. Viterbo, A. Rademaker, E.H. Haeusler and M.

Endler. Specifying ubiquitous systems through the Algebra of Contextualized Ontologies, accepted in Knowledge Engineering Review.

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(3) PROJECT MANAGEMENT

> Overview of the activities carried out by the partnership;
Identification of problems encountered and corrective action taken

The GetFun 1.0 Workshop program included a short project meeting. Fortunately, the meeting could count with project members from all participating institutions, with the exception of MTA, Israel.

After a brief introduction to the structure of the project, and its organization, by the coordination, the meeting was used as a forum to make scientific acquaintances, assess the success of the workshop, discuss management details concerning the reporting phases, and gather proposals for forthcoming project meetings. In particular, it was decided to organize the Second GetFun Workshop jointly with the major event Vienna Summer of Logic in the summer of 2014 with the help of our partners at TU Wien, Austria.

Project members were involved in more than 20 secondments.

- C. Caleiro (IT) visited UFRJ, Brazil – March 2013
- J. Ramos (IT) visited UFRJ, Brazil – March 2013
- J.Y. Béziau (UFRJ) visited IT, Portugal – January, February 2013
- J. Marcos (UFRN) visited IT, Portugal – July 2013
- C. Blasio (UNICAMP) visited IT, Portugal – July 2013
- A. Ciabattoni (TU-Wien) visited UFRJ, Brazil – April 2013

- G. Reis (TU-Wien) visited UFRJ, Brazil – April 2013
- L. Spendier (TU-Wien) visited UFRJ, Brazil – April 2013
- A. Zamansky (TU-Wien) visited UFRJ, Brazil – April 2013
- J. Marcos (UFRN) visited TAU, Israel – August 2013
- J. Marcos (UFRN) visited MTA, Israel – September 2013
- C. Blasio (UNICAMP) visited TAU, Israel – August, September 2013
- B. Konikowska (IPI-PAN) visited UFRJ, Brazil – April 2013
- A. Avron (TAU) visited UFRJ, Brazil – April 2013
- O. Lahav (TAU) visited UFRJ, Brazil – April 2013
- L. Cohen (TAU) visited UFRJ, Brazil – April 2013
- R. Diaconescu (IMAR) visited UFRJ, Brazil – April 2013
- L. Viganò (UNIVR) visited UFRJ, Brazil – April 2013
- M. Volpe (UNIVR) visited UFRJ, Brazil and UFRN, Brazil – April 2013
- Y. Shramko (KDPU) visited TU-Wien, Austria – August 2013
- M. Martins (UA) visited UFRJ, Brazil – April 2013

The number of secondments in 2013 is a little below the indicative plan initially proposed. We have encouraged project participants to organize and take better profit of this essential cooperation mechanism in 2014.

(4) ADDITIONAL INFORMATION

> Additional information, which may be considered useful to assess the work done during the reporting period

The organization of the second workshop of the project is already underway (<http://sqig.math.ist.utl.pt/GeTFun/2.0>). It will be held in Vienna, Austria on July 22–23, 2014, co-located with the major event Vienna Summer of Logic 2014 (<http://vsl2014.at>), and co-organized by Agata Ciabattone (TU-Wien) and Carlos Caleiro (IT).

In the final months of 2013, Prof. Luca Viganò, GeTFun's main scientific collaborator at UNIVR, Italy has moved to King's College, London, UK (KCL). The coordination is taking action to formalize the replacement of UNIVR by KCL in the project consortium.