

**MEMORANDUM FOR THE CREATION OF THE INTERNATIONAL SCIENTIFIC  
COORDINATION NETWORK (GDRI)  
"Linear Logic"**

**CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE**, hereinafter referred to as **CNRS**, a public scientific and technological institution, with headquarters at 3, rue Michel-Ange, 75794 Paris Cedex 16, France, represented by its **President, Mr. Alain FUCHS**,

acting in its own name and on behalf of:

- Laboratoire Preuves, Programmes et Systèmes (PPS), UMR 7126, Director: Mr. Thomas Ehrhard
- Institut de Mathématiques de Marseille (I2M), UMR 7373, Director: Mrs. Raphaële Herbin
- Laboratoire d'Informatique du Parallélisme (LIP), UMR 5668, Director : Mr. Guillaume Hanrot

AND

**UNIVERSITÉ PARIS DIDEROT-PARIS 7**, hereinafter referred to as **Université Paris 7**, a public scientific cultural and professional institution, with headquarters at 5, rue Thomas Mann, 75013 Paris France, represented by its **President, Mrs. Christine CLERICI**,

acting in its own name and on behalf of:

- Laboratoire Preuves, Programmes et Systèmes (PPS), UMR 7126, Director: Mr. Thomas Ehrhard

AND

**AIX-MARSEILLE UNIVERSITÉ**, hereinafter referred to as **AMU**, a public scientific, cultural and professional institution, with headquarters at Jardin du Pharo - 58, bd Charles Livon -13284 Marseille Cedex 07, France, represented by its **President, Mr. Yvon BERLAND**,

AND

**ÉCOLE CENTRALE DE MARSEILLE**, hereinafter referred to as **ECM**, a public scientific, cultural and professional institution, with headquarters at 38, rue Frédéric Joliot-Curie, 13451 cedex 13 Marseille, France, represented by its **Director, Mr. Frédéric FOTIADU**,

acting in their own names and jointly on behalf of:

- Institut de Mathématiques de Marseille – I2M, UMR 7373, Director: Mrs. Raphaële Herbin

AND

**ÉCOLE NORMALE SUPÉRIEURE DE LYON**, hereinafter referred to as **ENS Lyon**, a public scientific, cultural and professional institution, with headquarters at 15 parvis René Descartes - BP 7000 69342 Lyon Cedex 07 France, represented by its **President, Mr. Jean-François PINTON**,

AND

**UNIVERSITÉ CLAUDE BERNARD – LYON 1**, hereinafter referred to as **UCBL**, a public scientific, cultural and professional institution, with headquarters at 43, boulevard du 11 Novembre 1918, 69622 Villeurbanne Cedex, France, represented by its **President, Mr. François-Noël GILLY**,

acting in their own names and jointly on behalf of:

- Laboratoire d'Informatique du Parallélisme (LIP), UMR 5668, Director: Mr. Guillaume Hanrot

AND

**ISTITUTO NAZIONALE DI ALTA MATEMATICA**, hereinafter referred to as **INdAM** a public university, Tax Code 80126810581 - VAT 02126431002 – INPS registration number 7010161006, with headquarters at Città Universitaria - P.le Aldo Moro 5, 00185 – Rome, Italy, represented by its **President, Mr. Giorgio PATRIZIO**,

acting in its own name

AND

**UNIVERSITÀ DEGLI STUDI "ROMA TRE"**, hereinafter referred to as **UNIROMA**, a public University, with registered office in Roma (Italia), at Via Ostiense 161, VAT 04400441004, acting through the Department of Mathematics and Physics with registered office in Roma (Italia), at Via della Vasca Navale 84, represented by the **Director of Dipartimento di Matematica e Fisica - Sezione di Matematica, Mrs. Lucia CAPORASO**, authorised to act on this Agreement by resolution of the Department board dated 16/6/2015,

acting in its own name and on behalf of:

- Dipartimento di Matematica e Fisica - Sezione di Matematica, Director: Mrs. Lucia Caporaso

AND

**ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA**, hereinafter referred to as **UNIBO**, a public University, with registered office in Bologna (Italia), in Via Zamboni n. 33, Tax Registration No. 80007010376, VAT No. 01131710376, acting through the Department of Computer Science and Engineering with registered office in Bologna (Italy), at Mura Anteo Zamboni 7, represented by the **Director of Dipartimento Informatica – Scienza e Ingegneria, Mr. Simone MARTINI**, authorized to act on this Memorandum by resolution of the Department board dated 8/07/2015,

acting in its own name and on behalf of:

Dipartimento Informatica – Scienza e Ingegneria, Director: Mr. Simone Martini

AND

**UNIVERSITÀ DEGLI STUDI DI TORINO**, hereinafter referred to as **UNITO**, a public University, with registered office in Torino (Italia), at via Verdi 8, Tax Registration No. 80088230018, VAT No. 02099550010, acting through the Department of Informatica with registered office in Torino (Italia), at corso Svizzera 185, represented by the **Director of Dipartimento di Informatica, Mr. Luca CONSOLE**, authorised to act on this Memorandum by resolution of the Department board dated July 10, 2015,

acting in its own name and on behalf of:

- Dipartimento di Informatica, Director: Mr. Luca Console

**Hereinafter referred to individually as the "Party" or collectively as the "Parties".**

#### **PREAMBLE**

Linear Logic (LL) is a relatively new topic, born in the mid 1980s from the work of Jean-Yves Girard in the *Équipe de Logique of University Paris 7* on the connection between proofs and programs. After the initial discovery of LL by Girard, the topic developed quickly thanks in particular to a series of

international project funded by the EU ("Typed Lambda-Calculus" from 1991 to 1996, "Types" Esprit project since 1989, TMR project "Linear Logic in Computer Science" from 1998 to 2002). LL appeared to be an essential tool for many aspects of the semantics of programming languages and of proof theory. It is now an essential tool in denotational semantics, in the theory of abstract machines for functional languages, in implicit complexity etc.

The cooperation between France and Italy on LL has been particularly fruitful, with many common publications and bi-national projects such as the "Internazionalizzazione del sistema universitario" framework of the Italian ministry of Research from 2005 to 2008, or the "Logique Linéaire et Applications" CNRS PICS project from 2010 to 2012. One should also mention of various national projects during the period, on LL related topics, in the PRIN Italian framework, and in the ACI and ANR French frameworks; these projects were always open to researchers of the other country. A typical example is the Choco ANR project (2007-2011).

This French-Italian cooperation on Linear Logic had, since the beginning, a particularly strong impact on doctoral training: about 30 PhDs defended or currently being prepared under the joint supervision of Italian and French researchers. Also, a natural by-product of this scientific cooperation in the training of young researchers has been the "Curriculum italo-francese di laurea magistrale in Logica/Curriculum franco-italien de master en Logique", a joint master program between the Universities Roma Tre and Aix-Marseille, allowing to obtain a double (master) degree.

The researchers and laboratories involved in this project have complementary expertises on many LL related topics. For instance, PPS has developed an expertise on denotational semantics and games, Roma Tre is particularly interested by proof-nets, LIP, Bologna and Torino by typing and complexity issues, Aix-Marseille by the geometry of interaction and the algebraic extensions of LL etc. This complementarity manifests itself by a very important number of common French-Italian publications in major journals and conferences. The creation of this GDRI network will allow to increase the scientific outcomes of this complementarity by enforcing the coordination of these actors.

Consequently, the Parties agree, on the basis of the present memorandum (hereinafter referred to as Memorandum), to create the International scientific coordination network (GDRI) "**Linear Logic**" for a period of four (4) years starting retroactively January 1, 2015.

**It has been agreed as follows:**

#### **Article 1 – Purpose**

The purpose of this Memorandum is the creation of an International Scientific Coordination Network (hereinafter referred to as the "Network"), a non-incorporated means of cooperation, named "**Linear Logic**" the purpose of which is to exchange information on the scientific theme Linear Logic (hereinafter referred to as the "Network Theme").

The scientific purpose of the Network within the framework of the Network Theme and the activities resulting from it are stated in Annex 1.

The Network has no legal status or capacity.

This Memorandum neither sets out to nor results in, nor should anything in it be construed as either forming, creating, implementing or recognizing the creation of a joint company, agency relationship, corporation, interest group or any other type of commercial grouping or entity or de facto company by the Parties.

## **Article 2 – Composition**

The Network is composed of the laboratories/institutes/departments listed above.

The activities to be coordinated by the Network shall extend only to the scientific work inherent to the Network Theme of the laboratories/institutes/departments.

All personnel of the said laboratories/institutes/departments contributing to the Network activities shall remain assigned to their home laboratory/institute/department and institution.

For information purposes only, the list of the staff of the signatory Parties to the Memorandum and of external interested participants is attached to the present Memorandum.

## **Article 3 – Resources**

Each Party shall undertake to make available to the members of the Network affiliated to said Party the means it deems necessary to promote their activities within the framework of the regulations of the individual Parties and in particular:

- a/ The exchange of information between Network members through the organization of conferences, seminars, colloquia, workshops, thematic schools or work meetings on said Theme.
- b/ Discussion of the setting up and running, if necessary, of joint research projects on said Theme at a later stage.
- c/ Cooperation in terms of information and scientific documentation in particular through the exchange of publications and scientific reviews on the Network Theme.
- d/ Facilitate contacts and exchanges of researchers participating in the Network on said Theme.

## **Article 4 – Organization**

Two Coordinators, who are identified in Annex 2, shall be jointly appointed by the Parties for a four (4) year period.

The role of the Coordinators is to steer the Network activities and the Network Theme with the Scientific Committee, and to transmit the information submitted by the Parties to the Network members.

The Coordinators shall be assisted by a Scientific Committee. The Scientific Committee is composed of sitting representatives from member laboratories/institutes/departments, appointed by the Party (or Parties) to which the laboratory/institute/department is affiliated. The composition of the Scientific Committee selected is set forth in Annex 3.

The Scientific Committee shall meet at least once every two (2) years and as often as needed at the initiative of the Coordinators or of one third (1/3) of its members. As necessary and with the unanimous consent of the Scientific Committee members, these meetings may be held by videoconferencing. All minutes shall be distributed to the Parties.

Each Party shall transmit to the Coordinators the names of the scientists participating in the activities of the Network, for each member laboratory/institute/department affiliated to said Party. The Coordinators shall compile the list and transmit it to all the members of the Network. The Coordinators shall update the list whenever necessary.

For information purposes only, the list of the staff of the signatory Parties to the Memorandum and of external interested participants is attached to the present Memorandum.

The Coordinators shall draw up an annual scientific and financial report of the Network's activities which shall be submitted to the Parties.

#### **Article 5 - Implementation of Network activities**

The conferences (after consultation with the Network laboratories/institutes/departments), seminars, colloquia, workshops, thematic schools or work meetings on the Network Theme are organized under the sole responsibility of the Party that takes the initiative to do so. Each Party shall fund the participation of each of its members in Network activities.

The laboratories/institutes/departments involved in this Network can fund their participation to their own activities in the Network using their respective grants.

Within the framework of the exchanges referred to in Section d of Article 3 above, the relationship between the institution to which the researcher belongs and the host institution shall be strictly bilateral and their terms and conditions are not governed by this Memorandum.

For information purposes the Parties shall make mention of the financial resources that they intend to allocate to their participation in Network activities in Annex 4.

If two or more Parties intend to carry out research work jointly within the framework of the Network Theme, they shall establish the terms and conditions of said cooperation in a separate agreement binding on the signatory Parties, particularly with regard to Intellectual Property, the ownership and the exploitation of results.

#### **Article 6 - Duration**

This Memorandum is entered into for a period of four (4) years as of 1 January 2015 retroactively.

The provisions of this Memorandum thereto may be amended by means of a written amendment.

Any Party may withdraw from this Memorandum by giving six (6) months advance notice by registered letter with acknowledgement of receipt addressed to the other Parties.

The confidential information, and all reproduction thereof, exchanged between Parties, shall be destroyed/returned to the leaving Party upon receipt of an ordinary written request.

#### **Article 7 – Confidentiality**

Each Party shall undertake to treat confidentially and not to reveal to third parties any information that has been previously designated as confidential by the originating Party within the framework of the coordination.

Information received by the Parties shall not be confidential information if:

- it was already publicly known at the time of its disclosure hereunder, or becomes thereafter publicly known otherwise than through the fault of a Party;

- it is demonstrably developed at any time by the Parties without any connection with the information received hereunder;
- it is rightfully obtained at any time by the Parties from a third party without restrictions in respect of disclosure or use;
- it is disclosed and/or communicated due to complying with national law, national regulation, a decision by a national authority, and/or national court order. If this is the case, the Party complying with such requirement shall, if legally possible, endeavour to notify the disclosing Party as quickly as possible.

#### **Article 8 – Disputes**

The Parties shall endeavour to settle their differences out of court in an amicable way.

Should they fail to do so, any disputes may be settled in accordance with the rules of conciliation and the arbitration of the International Chamber of Commerce, under the aegis of one or more arbitrators appointed pursuant to these rules.

#### **Article 9 – Copies**

The present Memorandum has been drafted in one original copy and nine (9) copies certified by the CNRS. Each Party signs one copy and returns it to CNRS. CNRS collates and archives the original copy. It will send a certified copy of the signed memorandum to each of the Parties.

*Memorandum for the creation of the International Scientific Coordination Network (GDRI)  
"Linear Logic"*

Date..... Place.....

**For CNRS**

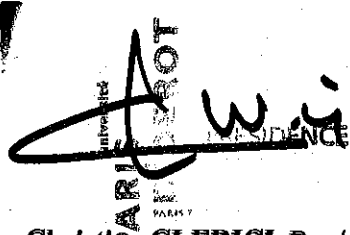
  
**Alain FUCHS, President**



*Memorandum for the creation of the International Scientific Coordination Network (GDRI)  
"Linear Logic"*

Date..... Place.....

**For Université Paris 7**



The image shows a handwritten signature in black ink, which appears to be 'Christine Clerici'. The signature is written over a rectangular stamp. The stamp contains the text 'Université Paris 7' and 'RESIDENCE' in a stylized font. There is also a small logo or emblem to the left of the signature.

**Christine CLERICI, President**

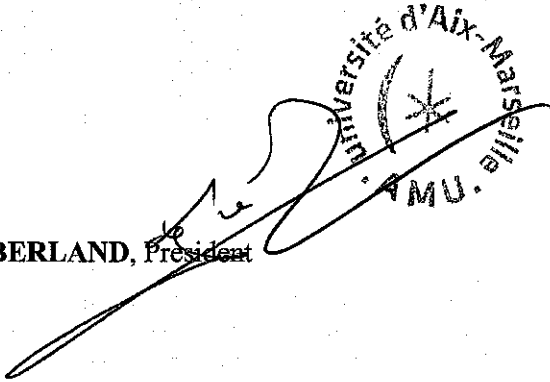


Memorandum for the creation of the International Scientific Coordination Network (GDRI)  
"Linear Logic"

Date 23/11/2015 Place... Marseille

For AMU

Yvon BERLAND, President



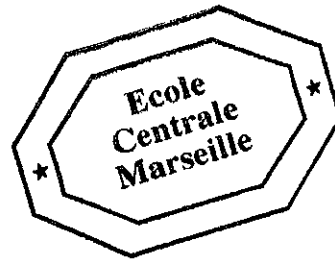
*Memorandum for the creation of the International Scientific Coordination Network (GDRI)  
"Linear Logic"*

Date...17.12.15 Place...MARSEILLE

For ECM

Le Directeur de l'Ecole Centrale Marseille,

  
Frédéric FOTIADU



Frédéric FOTIADU, Director

*Memorandum for the creation of the International Scientific Coordination Network (GDRJ)  
"Linear Logic"*

Date..... Place.....

**For ENS Lyon**

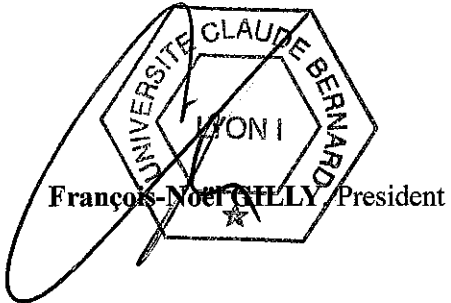
  


**Jean-François PINTON, President**  
**ÉCOLE NORMALE**  
**SUPÉRIEURE**  
**DE LYON**

*Memorandum for the creation of the International Scientific Coordination Network (GDRI)  
"Linear Logic"*

Date... 17/11/2015 Place... Lyon.....

For UCBL

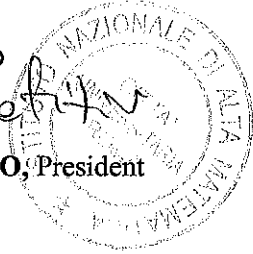


*Memorandum for the creation of the International Scientific Coordination Network (GDR)*  
*"Linear Logic"*

Date...15/12/2015 Place...ROMA

**For INdAM**

*Giorgio Patrizio*  
**Giorgio PATRIZIO, President**



Date **30 NOV. 2015** Place **ROME**

For **UNIROMA**



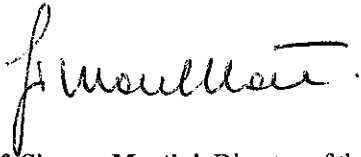
**Lucia CAPORASO**, Director of Dipartimento  
di Matematica e Fisica - Sezione di Matematica



*Memorandum for the creation of the International Scientific Coordination (GDR)*  
*"Linear Logic"*

Date..... Place..... *Bolofue*

**For UNIBO**

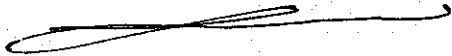


**Prof. Simone Martini**, Director of the Department of Computer Science and Engineering

*Memorandum for the creation of the International Scientific Coordination Network (GDRI)  
"Linear Logic"*

Date...10/11/2015 Place...TORINO

**For UNITO**



**Luca CONSOLE, Director of Dipartimento  
di Informatica**



## ANNEX 1 PROJECTED NETWORK ACTIVITIES

### History and General Context

In logic and fundamental computer science, the 1980s were characterized by a remarkable circulation of ideas between computer scientists and mathematicians on the correspondence between proofs and programs (Curry-Howard correspondence), each community understanding that ideas developed by the other were relevant for its own field. Major researchers (among whom we can mention Samson Abramsky, Vito Michele Abrusci, Henk Barendregt, Corrado Böhm, Mario Coppo, Pierre-Louis Curien, Mariangiola Dezani, Jean-Yves Girard, Martin Hyland, Gérard Huet, Jean-Louis Krivine, Jean-Jacques Lévy, Giuseppe Longo, Per Martin-Löf, Gordon Plotkin, Simona Ronchi della Rocca) decided to initiate an international cooperation on these topics in various EU projects such as

- "Typed Lambda-Calculus" (*Stimulation* programme) from 1991 to 1996
- various "Types" Esprit projects since 1989.

These projects had many important scientific outcomes and contributed to create a community of researchers interested by these topics, at the frontier of Computer Science, Logic and Mathematics.

One of the most remarkable results of this interactions between mathematicians and computer scientists has been the discovery of Linear Logic (LL) by Jean-Yves Girard in the *Équipe de Logique of University Paris 7* around 1985. After this initial discovery, the topic developed quickly thanks in particular to a series of international projects funded by the EU (the aforementioned "Typed Lambda-Calculus" from 1991 to 1996 and "Types" Esprit projects since 1989, the TMR project "Linear Logic in Computer Science" from 1998 to 2002).

### French-Italian cooperation

The cooperation between France and Italy on LL has been particularly fruitful, with many common publications and bi-national projects, among which we can mention a project in the "Internazionalizzazione del sistema universitario" framework of the Italian ministry of Research from 2005 to 2008, or the "Logique Linéaire et Applications" CNRS PICS project from 2010 to 2012. One should also mention the existence of various national projects during the period, on topics related to Linear Logic, in the PRIN Italian framework, and in the ACI and ANR French frameworks; these projects were always open to researchers of the other country. A typical example is the Choco ANR project (2007-2011).

It is essential to stress the role of the *Gruppo di Logica e Geometria della Cognizione* of University Roma Tre, led by Vito Michele Abrusci. Roma Tre logicians were among the initiators of most of the aforementioned initiatives and were particularly active for disseminating the ideas of Linear Logic in Italy.

This French-Italian cooperation on Linear Logic had, since the beginning, a particularly strong impact on doctoral training (about 30 PhDs defended or currently being prepared under the joint supervision of Italian and French researchers).

### Main Scientific Themes

LL is particularly suitable as the central topic of a French-Italian research network, because it is a transversal topic around which a stable scientific community has emerged during the past twenty

years. It is not just one more logical system but rather a fundamental underlying structure which arises in many different logical and computational contexts.

Historically, it appeared precisely as an underlying structure: Girard discovered LL while defining a denotational semantics of System F, a logical formalism he introduced 15 years earlier for proving Takeuti's conjecture which implies consistency of second order arithmetics. He discovered a refinement of his original model of system F featuring very strong duality properties which led him to the basic ideas of LL. He then introduced LL as a logical system presented in a sequent calculus style and discovered many new hitherto unknown mathematical and logical concepts and constructions: proof nets, geometry of interaction, phase semantics etc. Subsequent works by Girard and other authors confirmed the importance of LL, relating it with category theory, Scott semantics, sequentiality, implicit complexity, classical logic, proof search etc.

We review a series of topics where LL has shown its relevance and appears now as an essential part of the scientific landscape.

- *Theory of programming languages.* The decomposition of logical connectives brought by LL has induced a decomposition of computation. This is particularly clear for the lambda-calculus where LL brought a new understanding of environment machines which implement functional languages. This new understanding extends also to effects (non-deterministic and probabilistic computations, continuations etc), far beyond the usual purely functional framework.
- *Implicit Complexity.* The purpose is to develop new programming languages featuring *a priori* guarantees on their (time/space) execution complexity, typically granted by types. The logical status given by LL to structural rules has been particularly useful for understanding and developing such programming paradigms since computational complexity is essentially due to structural phenomena.
- *Parallelism and Concurrency.* LL induces new syntactic devices for representing proofs and programs (proof-nets in particular) which feature much more asynchronous and parallel computation possibilities than the usual presentations (lambda-calculi, sequent calculi). Moreover, it has been observed for a long time that linearity is an essential feature of concurrent computations and this crucial observation is taken into account, at a logical and semantical level, by the differential extension of LL.
- *Games and languages.* LL has been essential in the development of game models in the 1990s which led to solutions of the Full Abstraction Problem for PCF. Around 2000, deep connections were discovered between game models and higher order recursive schemes, and hence with higher order pushdown automata. It is more and more clear that LL will have an essential role in the understanding of this connection between denotational semantics and model checking.
- *Proof Theory.* It is here of course that LL has changed the landscape in the most radical way, proposing a new point of view on cut elimination and reintroducing, in a completely constructive setting, the perfect duality of classical logic: negation gets a new, geometric, significance, inverting the direction of the information flow.
- *Philosophy.* This new viewpoint on negation and cut elimination had also philosophical consequences. LL suggests that logic in general should be considered as a theory of interactions, and not only as a theory of truth (indeed, LL has a truth value semantics, but it plays only a marginal role in the theory). This change of paradigm has many philosophical consequences which are currently being studied.
- *Categories and algebra.* As explained above, LL started with a change of viewpoint on a denotational (categorical) model of the intuitionistic logical system F. In the new setting introduced by LL, the basic categorical structure is that of \*-autonomous category which provides an abstract viewpoint on many constructions of multilinear algebra. But LL also breaks identifications to which many mathematicians are used (for instance, between tensor and co-tensor) providing very simple models where they do not hold. The theory of correctness criteria also provides concrete presentations of \*-autonomous (and similar) categorical structures extending Penrose string diagrams. Accordingly, the categorical

semantics of proof-nets raises theoretic issues connected with categorical coherence properties which have to be addressed with modern higher dimensional categorical tools.

- *Possible connections with combinatorics.* It is certainly not a pure coincidence if, in many models of LL, proofs are interpreted as power series on potentially infinite dimensional vector spaces or similar structures. One meets here objects similar to those considered in combinatorics, such as generating series and species of structures and this possible connection is currently being studied.
- *Linguistics.* Intuitionistic logic brought a tool for syntactic analysis which can be understood as the construction of a proof starting from formulas (or types) associated with words: Lambek's calculus is an example of this approach. Thanks to proof-nets and to the new status they give to non-commutativity, LL brought a new dynamics to this approach.

The researchers and laboratories involved in this project have complementary expertises on many of these LL related topics. For instance, PPS has developed an expertise on denotational semantics and game semantics of programming languages and logical systems, Roma Tre is particularly interested by proof-nets, their correctness criteria and denotational properties, LIP, Bologna and Torino by typing systems and implicit complexity issues, Aix-Marseille by the geometry of interaction and the algebraic extensions of LL etc.

### Composition of the Network

In France and even more in Italy, researchers using LL tools and concepts are rather dispersed and one of our goals is to increase their coordination.

In Italy, this research topic is represented in the following universities, sometimes by only one or two individuals: Dipartimento di Matematica e Fisica Università Roma Tre, Dipartimento di Ingegneria dell'Impresa Università Tor Vergata, Dipartimento di Informatica Sapienza Università di Roma, Dipartimento di Informatica Scienza e Ingegneria Università di Bologna, Dipartimento di Informatica Università di Torino, Dipartimento di Sistemi ed Informatica Università di Firenze, Dipartimento di Scienze ambientali, Informatica e Statistica Università Ca' Foscari Venezia, Dipartimento di Matematica Università di Padova, Dipartimento di Informatica Università di Verona, Dipartimento di Ingegneria dell'Informazione e Scienze Matematiche Università di Siena, Dipartimento di Matematica Università di Genova, Dipartimento di Informatica, Bioingegneria, Robotica e Ingegneria dei Sistemi Università di Genova, Dipartimento di Informatica Università di Bari, Dipartimento di Matematica e Informatica Università di Udine, Dipartimento di Matematica ed Informatica Università di Catania, Dipartimento di Matematica e Informatica Università di Palermo, Dipartimento di Scienze Filosofiche, Pedagogiche ed Economico-Quantitative Università di Chieti.

In France, the following laboratories have (sometimes only one or two) members interested by LL: PPS (UMR 7126, university Paris Diderot), LIPN (UMR 7030, university Paris Nord), SFL (UMR 7023, university Paris 8), LIP (UMR 5668, École Normale Supérieure de Lyon), Institut de Recherches Philosophiques de Lyon (EA 4187, university Jean Moulin), I2M (UMR 7373, university of Aix-Marseille, Ecole Centrale de Marseille), LIF (Laboratoire d'Informatique Fondamentale, university of Aix-Marseille), Ascola team (INRIA, Nantes), LORIA (UMR 7503, university of Nancy), LABRI (UMR 5800, university of Bordeaux), LIX (UMR 7161, École Polytechnique), IRIT (UMR 5505, universities of Toulouse), LAMA (UMR 5127, university of Chambéry), LSV (UMR 8643, École Normale Supérieure de Cachan), LACL (EA 4219, university Paris Est Créteil), CEDRIC (EA 4629, Conservatoire des Arts et Métiers).

In addition to CNRS, we propose to associate officially the following institutions to the Network:

In France:

- University Paris Diderot (PPS, UMR 7126)

- École Normale Supérieure de Lyon (LIP, UMR 5668)
- University of Aix-Marseille (I2M, UMR 7373)

In Italy:

- INDAM (Istituto Nazionale di Alta Matematica)
- Università Roma Tre (department of mathematics)
- Università di Bologna (department of computer science and engineering)
- Università di Torino (department of computer science)

The reason for this choice is the significant number of interested researchers in these universities and departments, the fact that they host the two coordinators of the Network as well as the originator of Linear Logic Jean-Yves Girard and the fact that they have a long tradition of cooperation on LL related topics. The presence of INDAM is very important because this institute federates very efficiently the Italian research in mathematical sciences at a national level and has strong connections with CNRS, especially in various common laboratories and research networks.

The researchers from the other sites of the network will be associated to the four official sites along the following repartition.

Associated to PPS: LIPN, SFL, LORIA, LIX, LSV, LACL, CEDRIC.

Associated to LIP: Ascola Team, LABRI, Institut de Recherches Philosophiques de Lyon, LAMA.

Associated to I2M: LIF, IRIT.

Associated to Roma Tre: Università Tor Vergata, Sapienza Università di Roma, Università di Siena, Università di Bari, Università di Catania, Università di Palermo, Università di Chieti

Associated to Bologna: Università Ca' Foscari Venezia, Università di Padova, Università di Verona,

Associated to Torino: Università di Genova, Università di Udine, Università di Firenze.

### **Main Objectives and Benefits**

Our main objective in this Network is to increase the interactions between these complementary expertises and also, more specifically, to help young researchers and PhD students to fully benefit from them.

The objectives and expected benefits of the network can be summarized as follows. We indicate for each objective the actions which will be taken by the GDRI.

- Increase the international visibility of of the French-Italian community of researchers working on LL related topics. For this purpose, a web site will be created where the members and the activities of the network will be reported. A member of the network will be responsible of communication and will be in charge of informing the communication offices of CNRS and INDAM of our activities, in particular.
- Facilitate the communication within the French-Italian LL community thanks to a mailing list and a yearly global GDRI meeting as well as smaller thematic meetings, on demand.
- Thanks to its global vision of the community, the coordinators of the network will encourage members of the community to apply for European projects, and in particular, for ERC projects (in coordination with the CNRS ERC support services and other similar facilities).
- The network will also encourage PhD students to travel between the two countries, providing possibly limited support.

- One of the major outcome of the current French-Italian cooperation is the creation of international curricula common to both countries such as the *Curriculum binational de master en Logique* (see <http://logica.uniroma3.it/~tortora/CurriculumBinazLogica.html>). The French masters in Computer Science and Logic recruit frequently Italian students (this is especially true for the masters in Paris). We plan to make such curricula more visible and we want to extend them thanks to European tools such as the *Erasmus Mundus* programme.
- We think that the coordinators of the network should become natural points of contact for the INS2I and INSMI Institutes of CNRS, as well as for INDAM in Italy, for all questions related to Linear Logic and to the development of this thematic.
- In Italy, since the researches on LL are very dispersed, the network will be a major tool of information, coordination and organization.

### **Provisional programme for 2015 and 2016**

October-November 2015: specialized meeting on LL, quantitative semantics and evaluation strategies, Rome or Marseille.

November-December 2015: first plenary meeting of the network, and first meeting of the Scientific Committee in Bologna.

November 2016: second plenary meeting.

In 2016, other specialized meetings will be organized, following propositions made by the Scientific Committee during its first meeting.

**ANNEX 2  
COORDINATOR OF THE NETWORK  
AS OF JANUARY 1, 2015**

The signatory Parties to the Memorandum for the establishment of the International Scientific Coordination Network (GDRI) entitled "**Logique linéaire**" hereby appoint

**Mr. Thomas Ehrhard**, Laboratoire Preuves, Programmes et Systèmes (PPS), UMR 7126 (CNRS/Université Paris 7)

and

**Mr. Lorenzo Tortora de Falco**, Dipartimento di Matematica e Fisica, Università Roma Tre

as Coordinators of the Network as of January 1, 2015, for a period of four (4) years.

**ANNEX 3**

**SCIENTIFIC COMMITTEE OF THE NETWORK AS OF JANUARY 1, 2015**

- **Thomas Ehrhard**, Laboratoire Preuves, Programmes et Systèmes (PPS), UMR 7126 (CNRS/Université Paris 7), France  
thomas.ehrhard@pps.univ-paris-diderot.fr
- **Patrick Baillot**, Laboratoire d'Informatique du Parallélisme (LIP), UMR 5668 (CNRS / Ecole Normale Supérieure de Lyon / UCBL)
- **Laurent Regnier**, Institut de Mathématiques de Marseille (I2M), UMR 7373 (CNRS / Université d'Aix Marseille / Ecole Centrale de Marseille)  
regnier@iml.univ-mrs.fr
- **Lorenzo Tortora de Falco**, Dipartimento di Matematica e Fisica, Università Roma Tre, Italy  
tortora@uniroma3.it
- **Simone Martini**, Dipartimento di Informatica Scienza e Ingegneria, Università di Bologna, Italy  
martini@cs.unibo.it
- **Simona Ronchi Della Rocca**, Dipartimento di Informatica, Università di Torino, Italy  
ronchi@di.unito.it

Moreover, because of their essential contributions to Linear Logic and to its development, two colleagues will be permanently invited to the meetings of this Council which will benefit from their invaluable expertise.

- **Jean-Yves Girard**, Institut de Mathématiques de Marseille (I2M), UMR 7373 (CNRS/Université d'Aix Marseille)  
jeanygirard@gmail.com
- **Vito Michele Abrusci**, Dipartimento di Matematica e Fisica, Università Roma Tre, Italy  
abrusci@uniroma3.it

**ANNEX 4**  
**NETWORK PROJECTED BUDGET FOR 2015**

Country	Resources	Amount (€)
<b>France</b>		
<b>A) CNRS</b>	a) Supplementary resources from CNRS (European Research and International Cooperation)	6 000
<b>B) Université Paris 7</b>	a) PPS (UMR 7126) budget	0
<b>C) AMU</b>	a) I2M (UMR 7373) budget	0
<b>D) ECM</b>	a) I2M (UMR 7373) budget	0
<b>E) ENS Lyon</b>	a) LIP (UMR 5668) budget	0
<b>F) UCBL</b>	a) LIP (UMR 5668) budget	0
<b>Italy</b>		
<b>a) UNIROMA</b>	a) Department budget	0
<b>b) UNIBO</b>	a) Department budget	0
<b>c) UNITO</b>	a) Department budget	0
<b>d) INdAM</b>	a) Institute budget	6 000
<b>TOTAL</b>		<b>12 000</b>



**PARTICIPATING STAFF OF THE SIGNATORY PARTIES TO THE  
MEMORANDUM FOR THE CREATION OF THE INTERNATIONAL SCIENTIFIC  
COORDINATION NETWORK (GDRI)**

**“Linear Logic”**

**1- Members of Laboratoire Preuves, Programmes et Systèmes (PPS), UMR 7126  
(CNRS/Université Paris 7), France**

Name: Thomas Ehrhard  
Title: DR1 CNRS

Name: Antonio Bucciarelli  
Title: Maître de conférences (Université Paris 7)

Name: Giuseppe Castagna  
Title: DR2 CNRS

Name: Pierre-Louis Curien  
Title: DRCE CNRS

Name: Vincent Danos  
Title: DR2 CNRS

Name: Roberto Di Cosmo  
Title: Professeur (Université Paris 7)

Name: Claudia Faggian  
Title: CR1 CNRS

Name: Hugo Herbelin  
Title: DR2 CNRS

Name: Delia Kesner  
Title: Professeur (Université Paris 7)

Name: François Métayer  
Title: Maître de conférences (Université Paris 7)

Name: Paul-André Melliès  
Title: CR1 CNRS

Name: Paul Ruet  
Title: CR1 CNRS

Name: Alexis Saurin  
Title: CR2 CNRS

Name: Christine Tasson  
Title: Maître de conférences (Université Paris 7)

Name: Daniele Varacca  
Title: Professeur (Université Paris Est – Créteil)

**2- Members of Institut de Mathématiques de Marseille (I2M), UMR 7373, (CNRS/Université d'Aix Marseille/Ecole centrale Marseille), France**

Name: Jean-Yves Girard  
Title: DRCE CNRS

Name: Emmanuel Beffara  
Title: Maître de conférences (Aix-Marseille Université)

Name: Yves Lafont  
Title: Professeur (Aix-Marseille Université)

Name: Myriam Quatrini  
Title: Maître de conférences (Aix-Marseille Université)

Name: Laurent Regnier  
Title: Professeur (Aix-Marseille Université)

Name: Luigi Santocanale  
Title: Professeur (Aix-Marseille Université)

Name: Lionel Vaux  
Title: Maître de conférences (Aix-Marseille Université)

**3- Members of Laboratoire de l'Informatique du Parallélisme, UMR 5668 (CNRS / Université Claude Bernard Lyon 1 / ENS Lyon), Lyon**

Name: Patrick Baillot  
Title: DR2 CNRS

Name: Pierre Clairambault  
Title: CR2 CNRS

Name: Russell Harmer  
Title: CR1 CNRS

Name: Daniel Hirschhoff  
Title: Maître de conférences (ENS Lyon)

Name: Olivier Laurent  
Title: DR2 CNRS

Name: Damien Pous  
Title: CR1 CNRS

Name: Colin Riba  
Title: Maître de conférences (ENS Lyon)

**4- Members of Department of mathematics and physics, Università Roma Tre, Italy**

Name: Michele Abrusci  
Title: Professor

Name: Roberto Maieli  
Title: Research Fellow

Name: Teresa Numerico  
Title: Research Fellow

Name: Marco Pedicini  
Title: Professor

Name: Lorenzo Tortora de Falco  
Title: Professor

#### **5- Members of Department of Computer science and engineering, UNIBO, Italy**

Name: Simone Martini  
Title: Professor

Name: Ugo Dal Lago  
Title: Research Fellow

Name: Cosimo Laneve  
Title: Professor

#### **6- Members of Department of Computer science and engineering, UNITO, Italy**

Name: Simona Ronchi Della Rocca  
Title: Professor

Name: Luca Paolini  
Title: Assistant Professor

Name: Mariangiola Dezani  
Title: Professor

Name: Stefano Berardi  
Title: Professor

Name: Luca Roversi  
Title: Professor

Name: Ugo de'Liguoro  
Title: Professor

Name: Viviana Bono  
Title: Professor

Name: Felice Cardone  
Title: Professor

## EXTERNAL INTERESTED PARTICIPANTS

### In France:

#### **Laboratoire Structures Formelles du Langage, UMR 7023**

Name: Alain Lecomte  
Title: Professeur (Université Vincennes St-Dennis)

#### **Laboratoire d'Informatique de Paris-Nord (LIPN), UMR 7030**

Name: Pierre Boudes  
Title: Maître de conférences (Université Paris-Nord)

Name: Christophe Fouqueré  
Title: Professeur (Université Paris-Nord)

Name: Paulin Jacobé de Naurois  
Title: CR2 CNRS

Name: Stefano Guerrini  
Title: Professeur (Université Paris-Nord)

Name: Giulio Manzonetto  
Title: Maître de conférences (Université Paris-Nord)

Name: Damiano Mazza  
Title: CR1 CNRS

Name: Virgile Mogbil  
Title: Maître de conférences (Université Paris-Nord)

Name: Jean-Yves Moyen  
Title: Maître de conférences (Université Paris-Nord)

Name: Michele Pagani  
Title: Professeur (Université Paris 7)

Name: Jacqueline Vauzeilles  
Title: Professeur (Université Paris-Nord)

#### **Laboratoire lorrain de recherche en Informatique et ses Applications, UMR 7503**

Name: Didier Galmiche,  
Title: Professeur (Université de Lorraine)

Name: Jean-Yves Marion  
Title: Professeur (Université de Lorraine)

Name: Philippe De Groot  
Title: DR1 INRIA

Name: Sylvain Pogodalla  
Title: CR1 INRIA

**Laboratoire Bordelais de Recherche en Informatique (LABRI), UMR 5800**

Name: Richard Moot  
Title: CR1 CNRS

Name: Christian Rétoré  
Title: Professeur (Université de Montpellier)

Name: Sylvain Salvati  
Title: CR1 INRIA

**Laboratoire d'Informatique de l'Ecole Polytechnique, UMR 7161**

Name: Kaustuv Chaudhuri  
Title: CR2 INRIA

Name: François Lamarche  
Title: DR2 INRIA

Name: Dale Miller  
Title: DR1 INRIA

Name: Lutz Strassburger  
Title: CR2 INRIA

**Laboratoire de Mathématiques de l'Université de Savoie, UMR 5127**

Name: Tom Hirschowitz  
Title: CR1 CNRS

Name: Pierre Hyvernât  
Title: Maître de conférences (Université de Savoie)