CONSORTIUM AGREEMENT

For the performance of the "*BLIZAAR*" project

BETWEEN

UNIVERSITE DE BORDEAUX, a public establishment for scientific cooperation
Having its registered office at 35 place Pey Berland, 33000 Bordeaux, France
Represented by its President, Mr Manuel TUNON DE LARA

Hereafter referred to as "**Université de Bordeaux**",

on the first hand,

AND

BORDEAUX INP, a public establishment for scientific cooperation
Having its registered office at 1 Rue du Dr Albert Schweitzer 33402 Talence, France
Represented by its General Director, François CANSELL

Hereafter referred to as "**Bordeaux INP**",

on the second hand,

AND

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE, a scientific and technological public establishment
Having its registered office at 3, rue Michel-Ange 75794 PARIS Cedex 16, France, N° SIREN 180 089 013 03720, APE CODE 7219Z, Represented by its President, Mr Alain FUCHS, having given signatory power for this agreement to Mrs Gaelle BUJAN, regional representative for Aquitaine, Esplanade des Arts et Métiers – BP 105 – 33402 Talence Cedex, France

Hereafter referred to as "**CNRS**",

on the third hand,

Université de Bodeaux, Bordeaux INP and CNRS are referred to jointly below as the "Establishments",

The Establishments are acting jointly, both on their own behalf and on behalf of the Laboratory “Laboratoire Bordelais de Recherche en Informatique" (LABRI - UMR 58000), directed by Pascal Weil

Under the strengthened partnership between University of Bordeaux and CNRS, on November 14, 2014, CNRS, as co-supervisor of the laboratory LABRI, gives a mandate to University of Bordeaux to elaborate, negotiate and sign research and service agreements involving this laboratory in the name and on the behalf of CNRS.

AND

The **Centre Virtuel de la Connaissance sur l'Europe (Virtual Resource Centre for Knowledge about Europe)**, a public establishment for scientific cooperation developing a dedicated digital research infrastructure on European integration,
Having its registered in the Register of Commerce and Companies under No. J 43, subject to EU VAT under No. LU19379037,located at the Château de Sanem, L-4992 Sanem, Grand Duchy of Luxembourg,
Represented by Marianne Backes, Director

Hereafter referred to as "**CVCE**",

AND

The **Luxembourg Institute of Science and Technology, a public research Centre**
Having its registered office at 5, Avenue des Hauts-Fourneaux L-4362 Esch-sur-Alzette, Represented by Lucien HOFFMANN, Director of ERIN Department

Hereafter referred to as "**LIST**",

AND

ÉCOLE INTERNATIONALE DES SCIENCES DU TRAITEMENT DE l'INFORMATION, a private establishment for scientific cooperation
Having its registered office at Avenue du Parc 95011 Cergy-Pontoise, France, N° SIREN 32858158200025, Represented by its Directo r, Mr Nesim FINTZ
Hereafter referred to as "**EISTI**",

EISTI is acting on its own behalf and on behalf of the Laboratory "QUARTZ" (EA 7393), directed by Jean-Pierre Barbot.

The Establishments, CVCE, EISTI and LIST are referred to individually or jointly below as the "**PARTY/PARTIES**".

PRELIMINARY STATEMENT:

The PARTIES each have proven experience and competences applicable to the following field: information visualization, visual analytics, network analysis, dynamic networks and their exploration.

In view of their complementarity in this field, the PARTIES have prepared the BLIZAAR project (hereafter referred to as the "**PROJECT**"), described in annex 1, in response to the call for international collaborative project (PRCI) 2015 launched by the Agence Nationale de la Recherche (ANR – French National Research Agency) and the Fonds National de la Recherche (FNR – Luxembourg National Research Agency), hereafter referred to as the National Research Agencies.

The PROJECT aims at: crafting novel ways of exploring and analysing dynamic multilayer networks in the fields of digital cultural heritage and life sciences.

The PROJECT aims at:

- Exploring the concept of multilayer networks as the proper vehicle to model complex and dynamic data;
- Developing a systematic approach to explore the design space of hybrid visualizations targeted at multilayer dynamic networks;
- Focusing on real-world case studies to drive the fundamental aspects of our research while having tangible impact in well identified application domains.

As the PROJECT has been selected, the PARTIES have individually signed / will individually sign the following subsidy agreement with their National Research Agency:

- Université de Bordeaux : ANR n°ANR-15-CE23-0002-0 1
- EISTI ANR n°ANR-15-CE23-0002-02
- LIST INTER/ANR/14/9909176
- CVCE INTER/ANR/14/9909176

In this agreement, the PARTIES intend to establish the terms for the performance of the PROJECT, as well as their respective rights and obligations resulting therefrom.

IT HAS BEEN AGREED AS FOLLOWS:

ARTICLE 1 DEFINITIONS

In this AGREEMENT, the following terms written in capital letters have the following meanings, in both singular and plural forms:

1.1 AGREEMENT:

A set of documents consisting of this AGREEMENT and its Annexes together with any additional clauses.

1.2 AFFILIATE:

Any legal entity directly or indirectly controlled by one of the PARTIES, or that controls one of the PARTIES, or is under the same control as one of the PARTIES, as long as the control remains in effect.

For the purposes of this definition, "control" means:

- 50% or more of the corporate capital of this legal entity, or
- 50% or more of the shareholder or partner voting rights in this legal entity,

AFFILIATE is also understood to mean any company listed in Annex 4 accepted by all the other PARTIES.

1.3 NEW PATENTS:

All patent applications and the resulting patents, based on the RESULTS.

1.4 COMMITTEE:

Supervisory body composed as stipulated in article 5.2 below.

1.5 PROPRIETARY KNOWLEDGE:

All technical and/or scientific information and knowledge, particularly any improvement in pre-existing KNOW-HOW, trade secrets, business secrets, DATA, databases, BASIC SOFTWARE, folders, drawings, schematics, drawings, formulae, and/or any other type of information, in any form whatsoever, patentable or not and/or patented or not, and all the resulting intellectual property rights, necessary to perform the PROJECT, belonging to or held by a PARTY before the EFFECTIVE DATE of the AGREEMENT or developed independently of the performance of the PROJECT by a PARTY.

The PROPRIETARY KNOWLEDGE of the PARTIES is listed in Annex 2.

Each PARTY may only request changes to the list of PROPRIETARY KNOWLEDGE in Annex 2 according to the COMMITTEE procedure specified in article 5.2.2 below.

1.6 COORDINATORS:

The PROJECT COORDINATORS, as defined in article 5.1 below.

1.7 DATA:

Data sets (raw data, structured data, regulated data), accessible by request which may be transmitted by the PARTIES exclusively for the execution of the PROJECT.

1.8 EFFECTIVE DATE:

The EFFECTIVE DATE of the AGREEMENT is 01/01/2016.

1.9 CONFIDENTIAL INFORMATION:

All information and/or all data in any form and of any type whatsoever, including, particularly all handwritten or printed documents, samples, models, and/or knowledge, patentable or not, patented or not, communicated by a PARTY (the “ORIGINATING PARTY”) to one or more other PARTIES (the “RECEIVING PARTY”) under the AGREEMENT.

The PARTIES acknowledge that PROPRIETARY KNOWLEDGE and the RESULTS of the other PARTIES constitute CONFIDENTIAL INFORMATION.

Shall however not constitute CONFIDENTIAL INFORMATION, information the RECEIVING PARTY can prove that:

- was already in the public domain prior to communication or released afterwards but, in this case, with no misconduct on the part of the RECEIVING PARTY,

- was legally in their possession before they received it from the ORIGINATING PARTY,

- was received from a third party legally authorised to disclose it,

- for which use or communication was authorised beforehand in writing by the ORIGINATING PARTY,

- was the result developed independently and in good faith by members of the RECEIVING PARTY's staff who did not have access to this CONFIDENTIAL INFORMATION.

1.10 KNOW-HOW:

All non-patented, tested, practical information concerning the PROJECT:

- confidential: i.e. not generally known or easily accessible;
- substantive, i.e. important and useful for conducting the PROJECT and/or exploiting the RESULTS;
- identified, i.e. in sufficient detail to make it possible to verify that it meets the conditions for confidentiality and substantial nature;
- transmissible, i.e. transferable by contract or any other means.

1.11 SOFTWARE: Executable code and source code as well as the relevant technical documentation.

- **BASIC SOFTWARE**: SOFTWARE belonging to a PARTY before the EFFECTIVE DATE of this AGREEMENT.

- **DERIVATIVE SOFTWARE**: SOFTWARE developed from a BASIC SOFTWARE under this AGREEMENT. There are two distinct categories of DERIVATIVE SOFTWARE: Adaptations and Extensions.
    - **ADAPTATION**: DERIVATIVE SOFTWARE using the same algorithms as the BASIC SOFTWARE it is derived from and/or rewritten in another language.
    - **EXTENSION**: DERIVATIVE SOFTWARE providing new functions or performance, compared to the BASIC SOFTWARE from which it was derived, as well as plug-in modules.

- **NEW SOFTWARE**: SOFTWARE created ex-nihilo under the AGREEMENT.

1.12 FREE/OPEN SOURCE SOFTWARE:

SOFTWARE under a FREE or OPEN-SOURCE LICENCE.

1.13 FREE LICENCE:

Any licence compliant with the criteria defined by the Free Software Foundation (http://www.fsf.org).

1.14 OPEN SOURCE LICENCE:

Any licence compliant with the principles defined by the Open Source Initiative (http://www.opensource.org).

1.15 PROJECT SHARE:

Share of the work for which a PARTY is responsible, as defined in Annex 1 to the AGREEMENT.

1.16 PROJECT:

Research PROJECT entitled BLIZAAR - Hybrid Visualization of Dynamic Multilayer Graphs - governed by this AGREEMENT and described in Annex 1.

1.17 RESULTS:

All technical and/or scientific information and knowledge resulting from the PROJECT, particularly new know-how, trade secrets, business secrets, data, databases, NEW SOFTWARE, EXTENSIONS, folders, drawings, schematics, drawings, formulae, and/or any other type of information, in any form whatsoever, patentable or not and/or patented or not, and all the resulting intellectual property rights, generated by one or more PARTIES, or their subcontractors. RESULTS are the COMMON RESULTS and the PROPRIETARY RESULTS.

1.18 COMMON RESULTS:

All PROJECT RESULTS developed jointly by staff of at least two PARTIES, with characteristics that make it impossible to distinguish the intellectual contribution of each PARTY for the purpose of applying for or obtaining intellectual property rights.

1.19 PROPRIETARY RESULTS:

RESULTS obtained by one PARTY alone, without the assistance of another PARTY, i.e. without their participation in terms of inventive or intellectual activity during the performance of their PROJECT SHARE.

ARTICLE 2 PURPOSE OF THE AGREEMENT

The purpose of the AGREEMENT is to:

- define the terms of performance of the PROJECT and the collaboration between the PARTIES,
- set the rules for determining the intellectual property rights to the RESULTS,
- set the general terms and conditions for access to PROPRIETARY KNOWLEDGE and the general conditions for the publication, use, and exploitation of the RESULTS.

ARTICLE 3 TYPE OF AGREEMENT

No provision in this AGREEMENT shall be construed as constituting a legal entity of any type whatsoever between the PARTIES, nor as implying any solidarity between them.

The PARTIES state that the AGREEMENT cannot, in any case, be interpreted as constituting a corporate deed: affectio societatis is formally excluded.

None of the PARTIES have the right to make commitments on behalf of the other PARTIES, or to impose obligations on the other PARTIES, other than the COORDINATORS, and solely in the context of his/her duties and within the limitations of the rights granted to him/her herein.

ARTICLE 4 TERMS OF PERFORMANCE OF THE PROJECT

4.1 DISTRIBUTION OF THE PROJECT SHARES

The distribution of the PROJECT SHARES among the PARTIES and the performance schedule are defined in Annex 1.

Each PARTY is responsible for completing their PROJECT SHARE, as specified in the detailed technical annex submitted to their National Research Agencies.

4.2 PERFORMANCE OF PROJECT SHARE

Each PARTY agrees to make every effort to perform their PROJECT SHARE by mobilising all the necessary resources to do so.

Each PARTY is obliged to inform the other PARTIES of any difficulties in completing their PROJECT SHARE that are likely to jeopardise the objectives of the PROJECT. This information must be sent to the COORDINATORS as soon as possible.

Meetings between the PARTIES contributing to the same task will be held as often as necessary. Minutes of the meeting will be sent to the COORDINATORS and the concerned PARTIES as soon as possible.

4.3 SUBCONTRACTING

4.3.1 When a PARTY needs a subcontractor to perform its PROJECT SHARE, the other PARTIES shall give their acceptance in advance via the COORDINATORS. The other PARTIES will be considered to have given their consent if they have not objected after fifteen (15) calendar days following the receipt of such notification. If one of the PARTIES objects to the aforementioned subcontractor, it must inform the COMMITTEE within that timeframe, giving legitimate grounds for their objection.

4.3.2 Each PARTY will be fully responsible for performing the part of their PROJECT SHARE that they subcontract to a third party, on whom they shall impose the same obligations as those applicable to the PARTIES to the AGREEMENT, particularly in terms of confidentiality.

In relations with subcontractors, each PARTY agrees to take all necessary steps to acquire the intellectual property rights to RESULTS obtained by third party subcontractors under the PROJECT, so as not to restrict the rights granted to the PARTIES under the AGREEMENT.

Each PARTY shall ensure subcontractors do not claim any intellectual property or exploitation rights under article 7 and article 8 below.

In the case of subcontracting, any use by the subcontractor of PROPRIETARY KNOWLEDGE or RESULTS belonging to another PARTY will be subject to the other PARTY's prior written consent and will be limited solely to information required to perform the part of the PROJECT SHARE concerned.

4.4 PRESENCE OF STAFF OF ONE OF THE PARTIES ON THE PREMISES OF ANOTHER PARTY

The presence of staff of one of the PARTIES on the premises of another PARTY, for the purposes of the PROJECT, is subject to the following conditions:

- The presence of these staff is subject to the prior written consent of the host PARTY, it being understood that consent will only be given depending on the availability dates on the host site and that the PARTY that employs the staff concerned will be liable for all expenses related to the trip, unless expressly agreed otherwise.

- Each PARTY will ensure that its staff concerned will comply with the rules of procedure as well as all general and specific health and safety regulations applicable on the host site, of which they will be informed by the host PARTY prior to the visit.

In any case, staff hosted in this way will continue to report to their employer for management and disciplinary issues and will remain their employer's responsibility, in particular for insurance and social coverage.

ARTICLE 5 ORGANIZATION

5.1 COORDINATORS

5.1.1 Appointing the COORDINATORS

By mutual agreement between the PARTIES, Université de Bordeaux is appointed COORDINATOR of the PROJECT for the ANR and LIST for the FNR, referred to below as the "COORDINATORS". The COORDINATORS's representatives are Mr. Bruno PINAUD and Mr. Mohammad GHONIEM.

5.1.2 Role of the COORDINATORS

In particular, the COORDINATORS are responsible for:

- acting as an intermediary between the PARTIES and their National Research Agencies and between the PARTIES and the COMMITTEE,

- circulating to the PARTIES all correspondence from their National Research Agencies of interest to them and all correspondence sent to their National Research Agencies of interest to them, particularly for the purpose of informing them of any difficulties encountered in performing the PROJECT, within a reasonable time for the efficient running of the PROJECT,

- circulating the objectives and other information determined by the COMMITTEE concerning each task in the PROJECT to the PARTIES,

- compiling reports on the PROJECT status from a scientific standpoint and submitting them to their National Research Agencies, according to a predefined schedule, as well as, if applicable, a final research report at the end of the PROJECT,

- establishing, publicising, and updating the general schedule, as well as monitoring the performance of the PROJECT,

- in case of difficulty and/or divergence between the PARTIES, particularly those referred to in article 12 and, on the request of the PARTIES, to collect solutions proposed by each of the PARTIES, ensure their circulation among themselves, compile a summary, if relevant, and ensure that the solution chosen by the PARTIES is implemented. If applicable, the COORDINATORS inform their National Research Agencies.

5.1.3 Obligations of the PARTIES towards the COORDINATOR

Each PARTY has the following obligations:

- to provide the COORDINATORS with answers to possible requests from their National Research Agencies before the deadline set by their National Research Agencies,

- to inform the COORDINATORS of progress on their PROJECT SHARE, at intervals to be defined by mutual agreement in the COMMITTEE,

- submit requests to the COORDINATORS for additions to the Annexes concerned within a reasonable timeframe, compatible with the requirements of ANR,

- inform the COORDINATORS as soon as possible of any difficulty likely to jeopardise the normal completion of the PROJECT,

- submit the elements necessary to establish regular technical reports to the COORDINATORS on their requests, and, if applicable, those required for the final research report for their National Research Agencies thirty (30) calendar days before the report is to be submitted.

5.2 COMMITTEE

5.2.1 Composition of the COMMITTEE

A COMMITTEE, consisting of a representative of each of the PARTIES, shall be set up to ensure that the PROJECT runs smoothly. The list of representatives is attached in Annex 3. The COMMITTEE is chaired alternately by the COORDINATORS' representatives.

When the PARTIES act as the governing authorities for a joint research organisation (such as a "UMR "), they will appoint a single representative to the COMMITTEE.

As needed, these representatives may be assisted by any specialists of their choice, provided they inform the other PARTIES in advance and subject to any specialist who is not employed by one of the PARTIES signing a confidentiality agreement, in accordance with the provisions of article 9.1 below, before starting to work with the COMMITTEE.

A PARTY may object to a specialist who is not employed by another PARTY if there is a conflict of interest between the activities of the objecting PARTY and those of the specialist or his/her employer. Notwithstanding the preceding clause, none of the PARTIES may object to a public research valorisation organisation.

The aforementioned specialists will play a purely consultative role in COMMITTEE meetings.

5.2.2 Responsibilities of the COMMITTEE

The COMMITTEE monitors the performance of the AGREEMENT and, particularly, the advancement of the PROJECT. The COMMITTEE ensures that the milestones stipulated in Annex 1 are met and proposes solutions to the PARTIES in case of problems, as required. The COMMITTEE proposes to the PARTIES who decide all modifications to the financial estimates and/or schedule to the PARTIES for decision, subject to the approval of the National Research Agencies.

The COMMITTEE may propose to the PARTIES the exclusion of a defaulting PARTY in conformity with section 12 herein, as well as to include a new PARTY, subject to the approval of National Research Agencies.

The COMMITTEE also offers a privileged forum for the PARTIES to communicate any technical, scientific, industrial, commercial, or other information related to the PROJECT.

Under this heading, the COMMITTEE is, in particular, responsible for monitoring the deliverables and approving requests for changes to Annex 2: List of PROPRIETARY KNOWLEDGE necessary for the performance of the PROJECT.

The COMMITTEE may also act as a forum for consultation among the PARTIES in case of difficulty or dispute.

5.2.3 COMMITTEE Decisions

All COMMITTEE decisions are taken unanimously by all the members present or represented.

The COMMITTEE requires a quorum of three quarter (3/4) of the members present or represented.

Each COMMITTEE member has a single vote of the same value.

In the hypothesis referred to in article 5.2.2 and article 12 below, the defaulting PARTY or wishing to withdraw will not be entitled to vote and the decision must be voted unanimously by the other members.

Each time a vote is not unanimous, the COMMITTEE will review the point(s) of disagreement within a maximum of one (1) month. If the disagreement among the COMMITTEE is not resolved, the issue will be submitted to the representatives of the PARTIES that signed the AGREEMENT.

The COMMITTEE will meet at least once a year during the PROJECTS, convened by one of the COORDINATORS or on the express request of one of the PARTIES to one of the COORDINATORS.

COMMITTEE meetings must be convened (by email or post) a minimum of fifteen (15) calendar days before the meeting date. The convening document will include the names of the meeting participants as well as the agenda; any additional point for the agenda shall be sent to the COORDINATORS at least seven (7) calendar days before the meeting date so that all the PARTIES can be informed.

Each PARTY has the right to veto if a decision would have the effect of increasing their financial contribution to the PROJECT.

Minutes of COMMITTEE meetings will be drafted by the COORDINATORS and sent to each of the PARTIES within fifteen (15) calendar days after the meeting date.

All minutes are considered to be accepted by the PARTIES if no objections or claims are submitted in writing by the PARTIES (email or post) within thirty (30) calendar days after they receive it.

ARTICLE 6 FINANCIAL TERMS

Each PARTY will receive assistance directly from their National Research Agency corresponding to their PROJECT SHARE, in accordance with the provisions of the grant agreement signed with them or the special grant decision notified by them.

Each PARTY will be individually responsible for obtaining the additional funding necessary to complete its PROJECT SHARE.

The provisional amounts of subsidies allocated to the PARTIES and all additional funding that they provide for the purposes of performing the PROJECT are listed in Annex 5.

The AGREEMENT does not involve any financial transfers between the PARTIES.

ARTICLE 7 OWNERSHIP

7.1 PROPRIETARY KNOWLEDGE

With the exception of the provisions below, the AGREEMENT does not include any transfer or licencing of the rights of the PARTIES to their own PROPRIETARY KNOWLEDGE.

Subject to the provisions in article 8 below, nothing in this AGREEMENT prohibits the PARTIES from using their own PROPRIETARY KNOWLEDGE in any way whatsoever, by themselves or with any third parties of their choice.

7.2 RESULTS OTHER THAN SOFTWARE

7.2.1 PROPRIETARY RESULTS

PROPRIETARY RESULTS are the property of the PARTY that generated them.

Any NEW PATENTS and other intellectual property rights to these RESULTS will be filed at its own expense, in its own name, and on its own initiative.

7.2.2 COMMON RESULTS

In principle, PARTIES who have generated COMMON RESULTS are JOINT OWNERS, referred to below as: "**JOINT OWNERS**" in equal share.

Prior to any exploitation, the JOINT OWNERS will sign a separate agreement defining the distribution of shares in the COMMON RESULTS in equal share, as well as their relevant rights and obligations, including the principles presented below concerning the patentable COMMON RESULTS and/or copyright.

If COMMON RESULTS are generated partly by a joint research organisation (such as a "UMR"), the governing authorities of that organisation will be considered as a single JOINT OWNER. It is agreed that the governing authorities will be responsible for distributing the share of joint ownership allocated to them among themselves, according to the convention governing the organisation.

The JOINT OWNERS of COMMON RESULTS will decide whether a NEW PATENT should be filed jointly in both their names and will appoint one PARTY to be responsible for completing the formalities for filing and maintaining the NEW PATENT. They may also decide to appoint a third party to carry out these formalities.

Each PARTY will be responsible for the remuneration of the inventors working for them.

The expenses involved in filing, obtaining, and maintaining new, jointly-owned NEW PATENTS will be paid by the JOINT OWNERS according to their shares determined in the joint ownership agreement.

In addition, the PARTIES agree that:

- the names of the inventors shall be cited in NEW PATENT requests filed by one of the PARTIES (unless they object to this in writing), pursuant to applicable legal provisions;
- they shall ensure that their personnel, cited as inventors, will give all signatures and complete all formalities necessary to file, maintain, and defend the patents concerned

7.3 SOFTWARE RESULTS

The BASIC SOFTWARE remains the property of the PARTY that owns such BASIC SOFTWARE.

Any ADAPTATIONS, whether or not they have been developed by a PARTY other than the PARTY that owns the BASIC SOFTWARE, are the property of the PARTY that owns the BASIC SOFTWARE. Under this AGREEMENT, the PARTY responsible for developing the ADAPTATION assigns, free of charge, to the PARTY that owns the BASIC SOFTWARE, the worldwide right to reproduce, translate, adapt, and arrange it, or make any other modification, as well as the right to market that SOFTWARE for all possible applications and for the legal duration of the intellectual property rights, for all utilisation or exploitation purposes.

Any EXTENSIONS developed by a PARTY remain the sole property of that PARTY.

EXTENSIONS developed jointly by two or more PARTIES are owned jointly by such PARTIES. Nevertheless, the BASIC SOFTWARE to which the EXTENSIONS were added remains the property of the PARTY that owns it.

NEW SOFTWARE developed by one PARTY alone is the property of that PARTY, who is responsible for its protection (patent, APP registration, etc.) and may use it freely, including for commercial or industrial purposes.

NEW SOFTWARE developed by several PARTIES will be jointly owned by those PARTIES. Under this heading, the JOINT OWNERS will decide on the arrangements for the distribution and exploitation of the jointly-developed NEW SOFTWARE.

A joint ownership agreement will be established by the JOINT OWNERS as soon as it becomes necessary and, in any case, before any industrial and/or commercial exploitation of the NEW SOFTWARE.

ARTICLE 8 USE/EXPLOITATION

8.1 PROPRIETARY KNOWLEDGE

8.1.1 For the purpose of executing the PROJECT

The PARTIES will grant the right to use their PROPRIETARY KNOWLEDGE, listed in Annex 2, to the other PARTIES for the duration of the PROJECT, free of charge, on written request, provided it is necessary for them to complete their PROJECT SHARE.

The PARTIES will grant the right to use their DATA to the other PARTIES for the duration of the PROJECT, free of charge, on written request, provided it is necessary for them to complete their PROJECT SHARE.

8.1.2 For the purpose of exploiting the RESULTS

Throughout the duration of the PROJECT and for eighteen (18) months after its expiry and subject to third party rights and any restrictions listed in Annex 2, "List of PROPRIETARY KNOWLEDGE", each PARTY agrees to grant the other PARTIES a licence to their PROPRIETARY KNOWLEDGE listed in Annex 2, by a separate agreement and on written request, if this is necessary for the industrial and/or commercial exploitation, by the requesting PARTY, of its own RESULTS or other RESULTS to which they have obtained exploitation rights.

The owner agrees to grant the above licences on normal commercial terms for the sector of application considered.

These rights will be non-exclusive, non-transferable, and will not confer any sub-licensing rights, without the prior, written consent of the owner.

8.2 RESULTS

8.2.1 Use – Exploitation of their PROPRIETARY RESULTS by the PARTIES

Each PARTY is free to exploit their PROPRIETARY RESULTS, subject to the rights of the other PARTIES, stipulated in article 8.2.3 below.

8.2.2 Use – Exploitation of COMMON RESULTS by the JOINT OWNERS

The JOINT OWNERS of the COMMON RESULTS will specify the terms for exploiting the COMMON RESULTS under a valorisation or co-ownership agreement as mentioned in article 7.3.1.2 above and in compliance with the principles defined in article 8.2.3.
It is agreed by the JOINT OWNERS that any direct and/or indirect exploitation of the JOINT RESULTS and/or jointly owned NEW PATENTS for industrial and/or commercial purposes by one of the JOINT OWNERS will give rise to financial compensation for the other JOINT OWNERS, on terms and conditions to be defined at a later date in the aforementioned valorisation or joint-ownership agreement, without prejudice to article 8.2.3 below.

It is agreed by the PARTIES any industrial and/or commercial exploitation of the COMMON RESULTS will only start after the aforementioned valorisation or joint ownership agreement has been signed.

The agreement of all the JOINT OWNERS is required for exclusive exploitation.

For COMMON RESULTS consisting of SOFTWARE, the agreement of the other JOINT OWNERS is required for the distribution of source codes.

8.2.3 Use – Exploitation of the RESULTS by PARTIES other than the JOINT OWNERS

The rights described in this article 8.2.3 will be non-exclusive, non-transferable, and will not confer any sub-licensing rights, unless the PARTIES concerned agree to the contrary.

8.2.3.1 For the purpose of executing the PROJECT

The PARTIES will grant the right to use their RESULTS, whether PROPRIETARY RESULTS or COMMON RESULTS, to the other PARTIES for the duration of the PROJECT, on written request, provided they are necessary for them to complete their PROJECT SHARE. This right will be granted free of charge.

8.2.3.2 For the purpose of exploiting the RESULTS

Throughout the duration of the PROJECT and for twenty four (24) months after its expiry or termination, each PARTY agrees to grant the other PARTIES a licence to their RESULTS, if they are necessary for the industrial and/or commercial exploitation of the RESULTS by the requesting PARTY of its RESULTS.

To this effect, during the aforementioned period, each PARTY agrees to grant the other PARTIES a licence, on written request, on fair and reasonable terms, by a separate agreement.

Throughout the duration of the PROJECT and for twenty four (24) months after its expiry or termination, if a third party shows a firm interest in acquiring an exclusive exploitation licence for a COMMON RESULT, the PARTIES who are not owners or JOINT OWNERS of the aforementioned COMMON RESULT will be informed and will have a period of one (1) month from the date of notification:

- either to waive the right to exercise their option to an exploitation licence;
- or to exercise their option to obtain an exploitation licence on identical terms than those negotiated with the third party.

At the end of this period, each PARTY will be free to grant non-exclusive or exclusive exploitation licences for the RESULTS belonging to them with respect to article 8.2.2 for COMMONS RESULTS.

8.2.3.3 For internal research and teaching purposes

Each PARTY may use the PROPRIETARY RESULTS and COMMON RESULTS of the other PARTIES for their internal research and teaching needs, freely and free of charge, to the exclusion of any direct and/or indirect commercial use and/or to the exclusion of any reseach with third parties.

The use of the Results for research activities with third parties will be subject to the prior consent of the Party which own the Results.

8.2.4 Exploitation under FREE or OPEN SOURCE LICENCE

It is already agreed that any exploitation of SOFTWARE RESULTS through FREE or OPEN SOURCE LICENCE will be subject to the prior consent of the PARTIES. The PARTIES and their respective valorisation organisation, if needed, will meet as soon as possible to define by common agreement the appropriate economic model and the corresponding license.

8.3 OPEN SOURCE SOFTWARE

The OPEN SOURCE SOFTWARE and the applicable OPEN SOURCE LICENSES that a PARTY has already identified as necessary for the realization of its PROJECT SHARE and for the use of which the other PARTIES have no objection are listed in Annex 6 of the AGREEMENT.

A PARTY which suggests introducing during the execution of the AGREEMENT an OPEN SOURCE SOFTWARE will have to inform the other PARTIES in writing by indicating: the desired date of introduction of the OPEN SOURCE SOFTWARE, a description of the conditions in which the OPEN SOURCE SOFTWARE will be used, the PARTIES concerned and the applicable license OPEN SOURCE SOFTWARE audit by specifying its “copyleft” character.

Each PARTY concerned can oppose the introduction of the OPEN SOURCE SOFTWARE by means of a notification made within thirty (30) days as from the written request emanating from the plaintiff to all the PARTIES indicating the reasons of its opposition. The opposition by a PARTY will be valid only in case the introduction of the OPEN SOURCE SOFTWARE would damage the exploitation of the RESULTS of that PARTY and would strike a blow at the justifiable interests of that PARTY.

In case the opposition is validly made, the concerned PARTIES, with the assistance of the COMMITTEE, will make their best efforts to propose an alternative technical solution allowing not to use the OPEN SOURCE SOFTWARE at issue and/or to protect the interest of the PARTY opposing in the introduction of the OPEN SOURCE SOFTWARE.

ARTICLE 9 CONFIDENTIALITY/PUBLICATIONS - COMMUNICATION

9.1 CONFIDENTIALITY

9.1.1 Insofar as they are authorised to do so, each of the PARTIES will transmit to the other PARTIES only the CONFIDENTIAL INFORMATION considered necessary to pursue the objectives of the PROJECT.

No provision in this AGREEMENT shall be interpreted as obliging one of the PARTIES to transmit CONFIDENTIAL INFORMATION to another PARTY.

9.1.2 A PARTY that receives CONFIDENTIAL INFORMATION (hereafter referred to as the "**RECEIVING PARTY**") from another PARTY (hereafter referred to as the "**ORIGINATING PARTY**") agrees that, throughout the term of the AGREEMENT and for three (3) years after the end of the AGREEMENT, for any reason whatsoever, the CONFIDENTIAL INFORMATION provided by the ORIGINATING PARTY:

- will be protected, kept strictly confidential,
- will only be communicated internally to members of their staff or SUBCONTRACTORS on a need-to-know basis for the purposes of the PROJECT and subject to confidentiality obligations at least as strict as those resulting from this AGREEMENT,
- will only be used for the purpose defined in the AGREEMENT, and
- will not be copied, reproduced, or duplicated, totally or partially, except for the purposes of the PROJECT.

All CONFIDENTIAL INFORMATION and any reproductions thereof transmitted by one PARTY to another will remain the property of the ORIGINATING PARTY, subject to third party rights and must be, as far as practicable, returned to the latter or destroyed on their request within eight (8) days after receipt of the request.

In any case, the RECEIVING PARTY remains responsible to the ORIGINATING PARTY for compliance by their SUBCONTRACTORS with the obligations expressed in this article 9.1.2.

If the disclosure of CONFIDENTIAL INFORMATION is imposed by the application of a mandatory legal or regulatory provision, or a judicial, administrative, or arbitration ruling, it must be limited to a strict minimum. The RECEIVING PARTY agrees to inform the ORIGINATING PARTY of any disclosure as soon as possible, preferably in advance, so that they can take appropriate measures to preserve its confidential character.

9.1.3 Without prejudice to article 7 and article 8, it is expressly agreed between the PARTIES that the communication of CONFIDENTIAL INFORMATION among themselves, under this AGREEMENT, may not, in any case, be interpreted as expressly or implicitly granting any rights to the CONFIDENTIAL INFORMATION to the RECEIVING PARTY, particularly intellectual property rights (in terms of a licence or any other means).

9.2 PUBLICATIONS – COMMUNICATION

9.2.1 The PARTIES shall be free to publish on their PROPRIETARY RESULTS freely.

9.2.2 In compliance with the provisions of article 9.1, any intended publication, oral or written communication, by any means, on any medium or in any form whatsoever by one of the PARTIES, concerning the COMMON RESULTS, or including CONFIDENTIAL INFORMATION from the other PARTIES, during the Contract term and for three (3) years after it expires or is terminated, is subject to the prior written consent of the other PARTIES, via the COORDINATORS.

The other PARTIES on the COMMITTEE will inform the COORDINATORS of their decision within a maximum period of thirty (30) calendar days after the date the request was notified, in one of the following forms:

- unconditional acceptance of the intended communication; or
- a request that CONFIDENTIAL INFORMATION belonging to them be withdrawn from the intended communication; or

- a request for modifications, particularly if certain information in the intended communication is likely to be prejudicial to the industrial and/or commercial exploitation of the PROPRIETARY KNOWLEDGE and/or RESULTS; or

- a request to postpone the communication on real and serious grounds, particularly if information in the intended publication or communication is due to be patented.

However, none of the PARTIES are entitled to refuse their consent for a publication or communication beyond a period of twelve (12) months after the first submission of the publication/communication concerned.

In any case, the modifications requested must not be prejudicial to the scientific value of the publication.

PARTIES who fail to answer within thirty calendar days (30) will be considered to have given their consent.

These communications must mention the contribution of each of the PARTIES to the PROJECT, as well as the assistance provided by ANR and FNR in accordance with the grant agreements with the National Research Agencies' rules. However, the use of the PARTIES' logos is subject to their prior consent.

9.2.3 Subject to compliance with the provisions in article 9.1 on confidentiality, the terms of article 9.2.2 cannot stand in the way of:

- the obligation of each person participating in the PROJECT to submit an activity report to the organisation that employs them;

- researchers participating in the PROJECT defending their theses, in compliance with applicable university regulations and in closed session, if necessary.

- the filing by one or more PARTIES of a patent application based solely on their RESULTS;

- the publication or communication by a PARTY of its PROPRIETARY RESULTS.

ARTICLE 10 LIABILITY/INSURANCE

10.1 LIABILITY TOWARDS THIRD PARTIES

Each of the PARTIES is legally liable for all types of damages caused by them to movable and/or immovable property belonging to third parties, as well as personal injury to third parties.

10.2 INTER-PARTY LIABILITY

10.2.1 General provisions

Although each PARTY shall use reasonable endeavours to carry out the PROJECT, each PARTY does not undertake that any research will lead to any particular result, nor guarantee a successful outcome to the PROJECT.

A PARTY's aggregate liability towards the other PARTIES collectively shall be limited to once or the PARTY's share of the total costs of the PROJECT, provided such damage was not caused by intentional breach of this AGREEMENT, wilful misconduct or gross negligence

10.2.2 Physical injury

Each PARTY is responsible for covering its own personnel under applicable legislation on Social Security, accidents at work, and occupational diseases, as well as accomplishing all the requisite legal formalities.

Each of the PARTIES is legally liable for any type of injury caused to personnel employed by any other PARTY.

10.2.3 Damage to property

Each of the PARTIES is legally liable for damage caused by them to movable and/or immovable property belonging to another PARTY, due to or in the course of the performance of the AGREEMENT.

10.2.4 Consequential damage

The PARTIES agree among themselves not to claim compensation for indirect losses (particularly lost production, lost turnover, loss of earnings, etc.) that may occur in the context of the AGREEMENT.

10.3 GUARANTEES AND RESPONSIBILITIES RESULTING FROM PROPRIETARY KNOWLEDGE, RESULTS, AND OTHER INFORMATION

The PARTIES acknowledge that the PROPRIETARY KNOWLEDGE, RESULTS and information communicated by one of the PARTIES to another PARTY in the context of the AGREEMENT are provided "as is", without no guarantee of any type whatsoever.

The PROPRIETARY KNOWLEDGE, RESULTS, and other information are used by the PARTIES in the context of the AGREEMENT at their own expense and risk and, consequently, none of the PARTIES will be entitled to claim against another PARTY, or their SUBCONTRACTORS, if any, or their staff, under any heading whatsoever and for any reason whatsoever, on the grounds of the use of their PROPRIETARY KNOWLEDGE, RESULTS, or other information, including cases where a third party claims that their intellectual property rights have been infringed.

10.4 INSURANCE

Each of the PARTIES shall, as necessary and to the extent that it is compatible with their governing statutes, subscribe and maintain valid insurance policies to cover any property damage or personal injury that may occur during the performance of the AGREEMENT.

ARTICLE 11 TERM OF THE AGREEMENT

The AGREEMENT comes into force on the EFFECTIVE DATE until September the 30th 2019.

Any extension/modification will require an amendment to the AGREEMENT, signed by duly authorised representatives of the PARTIES.

The provisions in article 7, article 8, article 9 and article 10 will remain in force for the relevant specified period, notwithstanding the expiry or termination of the AGREEMENT.

ARTICLE 12 WITHDRAWAL OR FAILURE OF A PARTY

12.1 Withdrawal of a PARTY

A PARTY who wishes to withdraw from the PROJECT shall notify the COORDINATORS and the National Research Agencies of this decision and the grounds for it as soon as possible.

The COORDINATORS will convene an exceptional meeting of the COMMITTEE within fifteen (15) calendar days in the presence of the PARTY wishing to withdraw, who will explain the reasons for its decision.

The PARTIES will identify the consequences of this withdrawal and make their decision in compliance with the provisions of article 5.2 above.

On decision of the other PARTIES at the COMMITTEE meeting, that PARTY's PROJECT SHARE may be performed by another PARTY or a third party chosen by the COMMITTEE, subject to the approval of the National Research Agencies.

After this COMMITTEE meeting, the COORDINATORS will send the National Research Agencies the minutes of the meeting for their decision, in accordance with the provisions of article 5.2 above.

12.2 Failure of a PARTY

The AGREEMENT may be terminated automatically by one of the PARTIES if one of the others fails to fulfil one or more of its contractual obligations. Termination will come into effect one (1) month after the PARTY wishing to terminate sends a registered letter with acknowledgement of receipt, explaining the grounds for the complaint, unless the defaulting PARTY fulfils the contractual obligations within that period or provides proof within that time that they have been prevented from fulfilling the obligations by force majeure, as defined in ARTICLE 13 below.

The defaulting PARTY agrees to communicate to the other PARTIES, immediately and free of charge, all files and information necessary for them to continue with the PROJECT.

The COMMITTEE will then meet with the defaulting PARTY to decide on the arrangements for allocating ownership of any RESULTS developed jointly with the defaulting PARTY. The effective termination date and the arrangements for allocating ownership of the RESULTS will then be notified to the defaulting PARTY as soon as possible, by registered letter with acknowledgement of receipt.

12.3 General provisions

12.4.1 In the situations envisioned in articles below, the COORDINATORS will inform the National Research Agencies of the solution retained by the COMMITTEE. If the PARTIES select a third party to replace the PARTY that has withdrawn or been excluded, the COORDINATOR will request the National Research Agencies' approvals.

12.4.2 In the situations described in articles 12.1 et 12.2 **Erreur ! Source du renvoi introuvable.**, the PARTY that has withdrawn or been excluded agrees to communicate to the other PARTIES or the third party that replaces it, immediately and free of charge, all the

files and information necessary to perform the PROJECT SHARE concerned. Furthermore, the PARTY that has withdrawn or been excluded agrees to negotiate the terms of an exploitation licence for its RESULTS and/or PROPRIETARY KNOWLEDGE, under the terms of ARTICLE 8 above.

The withdrawal or exclusion of a PARTY does not dispense that PARTY from fulfilling its contractual obligations until the effective termination date and will not, in any case, be interpreted as a waiver of the other PARTIES' rights, particularly with regard to damages in the respect of the limitation set out in article 10.2.1.

The PARTY that has withdrawn or been excluded from the AGREEMENT no longer benefits from rights to the PROPRIETARY KNOWLEDGE and/or RESULTS of the other PARTIES that have been or may be granted to them under ARTICLE 8 above.

The provisions in article 8.2.2 above remain applicable to the PARTY that has withdrawn or been excluded.

The withdrawal or exclusion of a PARTY will be formally confirmed by an amendment to the AGREEMENT, signed by duly authorised representatives of the PARTIES.

12.4.3 If it is not possible to find a replacement and abandoning the PROJECT SHARE concerned would impact completion of the PROJECT as a whole, the COMMITTEE will propose arrangements for closing down the PROJECT to the National Research Agencies. Following their decisions, the AGREEMENT will be terminated and the accounts cleared.

ARTICLE 13 FORCE MAJEURE

No PARTY shall be held liable for the total or partial non-performance of their obligations due to an event that constitutes force majeure.

The PARTY invoking an event that constitutes force majeure shall inform the COORDINATOR in writing, with acknowledgement of receipt, as soon as possible after the event occurs. The COORDINATOR shall then inform the National Research Agencies as soon as possible.

The deadline for completion of the PROJECT SHARE concerned may be extended for a period determined by mutual agreement between the PARTIES and the National Research Agencies.

The obligations suspended during the force majeure event will be applicable again when its effects have come to an end. If the force majeure event lasts for a period exceeding three (3) months, the PARTIES will meet in COMMITTEE to find a solution to enable the PROJECT to be completed, including proposing the exclusion of the PARTY affected by force majeure.

ARTICLE 14 CORRESPONDENCE

Any notification concerning the performance or interpretation of this AGREEMENT will be addressed to the PARTIES, as indicated below. In order to be enforceable on other PARTIES, all notifications shall be sent by registered letter with acknowledgement of receipt, and will be considered valid on the date it is received by the notified PARTY.

All administrative communication concerning the PROJECT shall be sent to the following:

Representing **Université de Bordeaux**
Mrs Karine ABADO
Direction de la Recherche, de la Valorisation et des Etudes Doctorales
Bât. A33 - 351, cours de la Libération - 33405 Talence cedex
FRANCE
karine.abado@u-bordeaux.fr

Representing **Bordeaux INP**
Mrs Stéphanie CLEMENT
Avenue des facultés - CS 60099
33405 Talence Cedex – France
stephanie.clement@bordeaux-inp.fr

Representing **EISTI**
Mr Didier ROUSSEAU - Directeur des Systèmes d'Information
Avenue du Parc
95000 Cergy-Pontoise Cedex – France
+33 1 34 25 10 01
dro@eisti.eu

Representing **CVCE**
Monsieur Ghislain SILLAUME
CVCE, Château de Sanem, L-4992 Sanem, Grand-Duché de Luxembourg
Tel.: +352 59 59 20-1
ghislain.sillaume@cvce.eu

Representing **LIST**
Mr. Daniel Thiry
41, rue du Brill
L-4422 Belvaux
Luxembourg
Tél : +352.27.58.88.22.29
Courriel: Daniel.thiry@list.lu

All communication concerning the technical management of the PROJECT shall be sent to the following:

Representing **LABRI**
Mr. Bruno PINAUD
Domaine universitaire, 351, cours de la Libération
33405 Talence
Tél : 05 40 00 35 03
Courriel : bruno.pinaud@labri.fr

Representing **EISTI**
Mr. Sébastien RUFIANGE
2 Boulevard Lucien Favre - CS 77563
64075 Pau Cedex - France
+33 5 590 590 96
sebastien.rufiange@eisti.eu

Representing **CVCE**
Monsieur Marten DÜRING
CVCE, Château de Sanem, L-4992 Sanem, Grand-Duché de Luxembourg
Tel.: +352 59 59 20-1
Marten.during@cvce.eu

Representing **LIST**
Mr. Mohammad Ghoniem
41, rue du Brill
L-4422 Belvaux
Luxembourg
Tél : +352.275.888.623
Courriel : mohammad.ghoniem@list.lu

Each of the PARTIES shall inform the other PARTIES of any change of address as soon as possible, in writing.

ARTICLE 15 INTUITU PERSONAE – CONTRACT ASSIGNMENT – CHANGE OF CONTROL

The PARTIES state that AGREEMENT is entered into on an *intuitu personae* basis.

Consequently, none of the PARTIES are authorised to assign all or part of their rights and obligations to a third party without the prior, written consent of the other PARTIES.

However, the PARTIES agree that the CVCE may transfer without the prior consent of the other PARTIES, all its rights and obligations under this AGREEMENT to the University of Luxembourg as a result of the merger between the two institutions will be effective on July the 1st 2016. This transfer will be officially recorded by amendment signed by all the PARTIES.

ARTICLE 16 APPLICABLE LAW – DISPUTES

The AGREEMENT is governed by Belgian law.

In case of any dispute concerning the interpretation, performance, or validity of this AGREEMENT, and except in emergencies that justify applying to a competent court for an injunction, the PARTIES will make every effort to settle out of court, possibly via the intermediary of the COMMITTEE and their respective governing authorities.

If the PARTIES are unable to settle their dispute within three (3) months after it occurs, the case will be brought before the courts with relevant jurisdiction by the prosecuting.

ARTICLE 17 MISCELLANEOUS PROVISIONS

17.1 NULLITY

If one or more of the provisions in this AGREEMENT are contrary to a law or legally enforceable text, the law or legal text will take precedence and the PARTIES will make the necessary modifications by means of an additional clause, drafted and signed by their duly authorised representatives, in compliance with this law or legal text. All other provisions in

the AGREEMENT will remain applicable and the PARTIES will make every effort to find an acceptable alternative solution in the spirit of the AGREEMENT.

17.2 OMISSIONS

The fact that one of the PARTIES fails to enforce one or more provisions in the AGREEMENT cannot, in any case, be construed as a waiver by that PARTY of the right to enforce it at a later date.

17.3 MODIFICATION

The AGREEMENT replaces all precedings, written and/or oral agreements between the PARTIES on the same subject and constitutes the entire agreement between the PARTIES on this subject. No addition or modification to the terms of the AGREEMENT will be binding on the PARTIES unless it is expressed in a written additional clause, signed beforehand by their duly authorised representatives of the PARTIES.

17.4 LIST OF ANNEXES

The following documents annexed to the AGREEMENT form an integral part of it:

- Annex 1: Description of the PROJECT;
- Annex 2: List of PROPRIETARY KNOWLEDGE;
- Annex 3: Composition of the COMMITTEE;
- Annex 4: Financial annex;
- Annexe 5: Open Source Software.

Signed in five (5) copies, on

Representing Université de Bordeaux
Mr Manuel TUNON DE LARA

Signed in five (5) copies, on

Representing Bordeaux INP
Mr François CANSELL

Signed in five (5) copies, on

Representing CVCE
Marianne Backes, Director

Signed in five (5) copies, on

Representing LIST
Lucien HOFFMANN, Director of ERIN Department

Signed in five (5) copies, on

Representing EISTI
Mr Nesim FINTZ

Annex 1: Description of the PROJECT

Annex 2: List of PROPRIETARY KNOWLEDGE

For the Establishments (LABRI):

- **Published knowledge**:

→ Une approche de visualisation analytique pour comparer les modèles de propagation dans les réseaux sociaux. Jason Vallet, Bruno Pinaud, Guy Melançon. *Extraction et Gestion de Connaissances (EGC 2015)*, 2015, Revue des Nouvelles Technologies de l'Information (RNTI), RNTI-E-28, pp.365--376, 2015, <http://editions-rnti.fr/?procid=100162>

→ Renoust B., G. Melançon and T. Munzner (2015). Detangler: Visual Analytics for Multiplex Networks. Computer Graphics Forum 34(3), pp. 321-330.

→ Edge Visual Encodings in Matrix-Based Diagrams. Joris Sansen, Romain Bourqui, Bruno Pinaud, Helen Purchase. C*onference on Information Visualisation (IV'15)*, Jul 2015, barcelone, Spain. Proceedings of the 19th International Conference on Information Visualisation (IV'15)

→ A Visual Analytics Approach to Compare Propagation Models in Social Networks. Jason Vallet, Hélène Kirchner, Bruno Pinaud, Guy Melançon. *Graphs as Models*, Electronical Proceedings in Theoretical Computer Science, 181, 2015, <http://www.utwente.nl/ewi/gam2015/>. <10.4204/EPTCS.181.5>

→ Visual Modelling of Complex Systems: Towards an Abstract Machine for PORGY. Maribel Fernandez, Hélène Kirchner, Ian Mackie, Bruno Pinaud. *Computability In Europe*, Springer International Publishing, Lecture Notes in Computer Science, 8493, pp.183-193, 2014, Language, Life, Limits. <10.1007/978-3-319-08019-2_19>

→ Strategic Port Graph Rewriting: An Interactive Modelling and Analysis Framework. Maribel Fernandez, Hélène Kirchner, Bruno Pinaud. *3rd Workshop on GRAPH Inspection and Traversal Engineering.* 159, pp.15--29, 2014, <10.4204/EPTCS.159.3>

→ Queyroi, F., M. Delest, J.-M. Fédou and G. Melançon (2013). Assessing the quality of multilevel graph clustering. Data Mining and Knowledge Discovery, Volume 28, Issue 4, pp. 1107-1128 (was online already in July 2013).

→ Rufiange, S. and G. Melançon (2014). AniMatrix: A Matrix-Based Visualization of Software Evolution. IEEE Working Conference on Software Visualization. Vancouver, Canada, ACM: 137-146.

→ Renoust, B., G. Melançon, et al. (2014). Entanglement in Multiplex Networks: Understanding Group Cohesion in Homophily Networks. Social Network Analysis - Community Detection and Evolution. Lecture Notes in Social Network, Springer, p. 89-117.

[BC] Benjamin Renoust, Guy Melançon, and Marie-Luce Viaud (2013). Entanglement: understanding group cohesion in homophily networks. Lecture Notes in Social Networks, Springer (long version of selected papers from ASONAM 2013).

→ Tulip III. David Auber, Daniel Archambault, Romain Bourqui, Maylis Delest, Jonathan Dubois, Bruno Pinaud, Antoine Lambert, Patrick Mary, Morgan Mathiaut, Guy Melancon. *Encyclopedia of Social Network Analysis and Mining*, 2014, 978-1-4614-6169-2. <10.1007/978-1-4614-6170-8_315>

→ Studying propagation dynamics in networks through rule-based modeling. Jason Vallet, Bruno Pinaud, Guy Melançon. *Visual Analytics Science and Technology (IEEE VAST)*, Poster Electronic Proceedings VAST2014, 2014, <http://ieeevis.org/year/2014/info/vis-welcome/welcome>

→ PORGY: A Visual Graph Rewriting Environment for Complex Systems. Bruno Pinaud, Guy Melançon, Jonathan Dubois. *Computer Graphics Forum*, Wiley, 2012, Eurographics Conference on Visualization (EuroVis 2012), 31 (3), pp.1265-1274. <10.1111/j.1467-8659.2012.03119.x>

→ Animation, Small Multiples, and the Effect of Mental Map Preservation in Dynamic Graphs. Daniel Archambault, Helen Purchase, Bruno Pinaud. *IEEE Transactions on Visualization and Computer Graphics*, Institute of Electrical and Electronics Engineers, 2011, 17 (4), pp.539-552. <http://doi.ieeecomputersociety.org/10.1109/TVCG.2010.78>. <10.1109/TVCG.2010.78>

→ PORGY: Strategy-Driven Interactive Transformation of Graphs. Oana Andrei, Maribel Fernandez, Hélène Kirchner, Guy Melançon, Olivier Namet, Bruno Pinaud. *6th Int. Work. on Computing with Terms and Graphs (TERMGRAPH 2011)*, 48, pp.54-68, 2011, Elec. Proc. in Theoretical Computer Science (EPTCS). <10.4204/EPTCS.48.7>

→ PORGY: Interactive and Visual Reasoning with Graph Rewriting Systems. Bruno Pinaud, Jonathan Dubois, Guy Melançon. *Conf. on Visual Analytics Science and Technology (VAST), 2011 IEEE (Poster Abstract)*. pp.293-294, 2011, <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6102480>. <10.1109/VAST.2011.6102480>

→ Difference Map Readability for Dynamic Graphs. Daniel Archambault, Helen Purchase, Bruno Pinaud. *18th Int. Symp. on Graph Drawing.* 6502, pp.50-61, 2011, LNCS. <10.1007/978-3-642-18469-7_5>

→ The readability of Path-Preserving Clusterings of Graphs. Daniel Archambault, Helen Purchase, Bruno Pinaud. *Eurovis 2010, 12th annual Eurographics/IEEE Symposium on Visualization.* WILEY, 29(3), pp.1173-1182, 2010, Eurographics/ IEEE-VGTC Symposium on Visualization 2010; Special issue, EUROVIS 2010. <10.1111/j.1467-8659.2009.01683.x>

- **Knowledge not published:**

→ Dynamic graph visualisation

→ Analysis and decomposition of dynamic graph

→ Social network analysis

→ Interactive user evaluation of graph visualisations

→ Build and use a graph hierarchy to analyse/visualise a graph

- **Software**

→ Tulip 4 (GNU Lesser General Public License, http://tulip.labri.fr)

→ Porgy 2.0, 3.0 (GNU Lesser General Public License, http://tulip.labri.fr/TulipDrupal/?q=porgy)

→ Detangler (X11 license, MIT License, https://github.com/renoust/Detangler)

For EISTI:

- **Published knowledge:**

Dalia Sulieman, Maria Malek, Hubert Kadima and Dominique Laurent, Toward Social-Semantic Recommender Systems, International journal of information systems and social change, vol. 7 (1), 2016.

Amini, F., Rufiange, S., Hossain, Z., Ventura, Q., Irani, P., McGuffin, M. J. (2015). « The Impact of Interactivity on Comprehending 2D and 3D Visualizations of Movement Data », IEEE Transactions on Visualization and Computer Graphics, vol. 21, no. 1, pp. 122-135, IEEE.

Jean-Philippe Attal and Maria Malek, A New Label Propagation With Dams, SNNA Workshop, IEEE/ACM International Conference on Advances in Social Network Analysis and Mining (ASONAM), Paris, août, 2015.

Jean-Philippe Attal, Maria Malek, Clustering algorithms for large complex networks, journées Big Data Mining and Visualization, Lille, juin 2014.

Rufiange, S., Melançon, G. (2014). « AniMatrix: A Matrix-Based Visualization of Software Evolution ». VISSOFT, 10 pages, IEEE.

Rufiange, S., Fuhrman, C. (2014). « Visualizing protected variations in evolving software designs », Journal of Systems and Software, vol. 88, pp. 231-249, Elsevier.

Rufiange, S., McGuffin, M. J. (2013). « DiffAni: Visualizing Dynamic Graphs with a Hybrid of Difference Maps and Animation ». IEEE Transactions on Visualization and Computer Graphics (InfoVis 2013), vol. 19, no. 12, pp. 2556-2565, IEEE.

Hubert Kadima, Maria Malek, Toward ontology-based personalization of a Recommender System in social network, International Journal of Computer Information Systems and Industrial Management (IJCISIM), Volume 5, 2013.

Dalia Sulieman, Maria Malek, Hubert Kadima and Dominique Laurent, Combining social and semantic information for recommandation: comparative study (MARAMI), Saint Etienne, Octobre, 2013.

Maria Malek, Hubert Kadima, Searching frequent itemsets by clustering data: towards a parallel approach using MapReduce, In the Web Information System Engineering 2011 and 2012 Combined Workshops, LNCS 7652 proceeding, PP 251-258, Springer 2013.

Rufiange, S., McGuffin, M. J. et Fuhrman, C. (2012). « TreeMatrix: A Hybrid Visualization of Compound Graphs », Computer Graphics Forum, vol. 31, no. 1, pp. 89-101, Wiley-Blackwell Publishing.

Bornhofen, S., Heudin, J.-C., Lioret, A., Torrel, J.-C., eds. (2012). Virtual Worlds - Artificial Ecosystems and Digital Art Exploration, Science eBook, Paris.

Bornhofen, S., Gardeux, V. and Machizaud, A. (2012). From Swarm Art Toward Ecosystem Art. International Journal of Swarm Intelligence Research, 3(3): 1-18.

Bornhofen, S., Machizaud, A. and Gardeux, V. (2011). Ecosystem Dynamics for Creative Image Generation. In Chelouah et al. (editors), Proceedings of the 1st International Conference on Swarm Intelligence, Cergy, France.

Rufiange, S., McGuffin, M. J., and Fuhrman, C. (2009). Visualisation hybride des liens hiérarchiques incorporant des treemaps dans une matrice d'adjacence. Proceedings of the 21th International Conference of the AFIHM, Grenoble, France, ACM.

- **Knowledge not published:**

Network visualization
Hybrid visualization
Evaluation
Software engineering
Human-Computer Interaction
Image Synthesis
GPU programming
Complex Network Analysis
Recommendation systems
Big Data Mining

For the CVCE

A set of digital documents (text, audiovisual, photos) and metadata of the organization of CVCE ePublications and the numbers of document types available (text, audio, video, picture, map, graph, table) in French, German and English languages, selected and provided by the CVCE.

Published knowledge:

Wieneke, Lars, Düring, Marten, Croce, Vincenzo and Novak, Jasminko 2014. histoGraph as a Demonstrator for Domain Specific Challenges to Crowd-Sourcing. In *Social Informatics*. Luca Maria Aiello and Daniel McFarland, edited by. Springer International Publishing.

Novak, Jasminko, Wieneke, Lars, Düring, Marten, Silaume, Ghislain, Lallemand, Carine, Croce, Vincenzo, et al. 2014. histoGraph – A Visualization Tool for Collaborative Analysis of Historical Social Networks from Multimedia Collections. In *Proceedings of 18th International Conference Information Visualisation (IV), 2014 Conference*. Paris, France.

Knowledge not published:

Network visualisation, Graph visualisation, Human-Computer Interaction

For the LIST

- **For transcriptomics**

Plant material and RNA extraction
Hemp (cv. Santhica 27) hypocotyl of 6, 9, 15 and 20 days have been grown in incubator following a cycle of 16h light 25℃ / 8h night 20℃ . Each of the 3 biological replicates consisted in 20 hypocotyls randomly selected among all incubators. Sampling was performed on a single experimental batch to minimize technical variability. Samples were immediately frozen in liquid nitrogen and conserved at -80℃ before extraction. Hypocotyls were crushed in fine powder using a mortar, a pestle and liquid nitrogen. Total RNA has been extracted using RNeasy Plant Mini Kit (Qiagen), treated with DNase I, quantified by Qubit 2.0 Fluorometer (Invitrogen) using Qubit RNA Assay Kit (Molecular Probes) and quality-checked with NanoDrop 1000 Spectrophotometer (Thermo Scientific) and 2100 Bioanalyzer (Agilent Life Sciences). All the RNAs displayed a RIN above 8.
Library preparation and sequencing

Libraries were prepared from 10ng mRNA using the SMARTer stranded RNA-Seq Kit (Clonetech laboratories). Following cDNA synthesis, shearing, indexation and 13 cycles of enrichment, libraries were checked using 2100 Bioanalyzer (DNA-1000) to evaluate the mean fragment size. Quantification was done with a qPCR (96-wells-plate) using a ViiA7 Real-Time PCR System (Applied Biosystems) and the KAPA Illumina library quantificaion Kit. The pooled libraries were sequenced using a Illumina MiSeq in 5 consecutive runs (MiSeq reagent kit V3 150 cycles).

Mapping and data analysis

Raw sequences reads have been uploaded in CLC Genomics Workbench 8.0.3. Sequences were filtered and trimmed as follow: sequence length>55bp, sequence quality score <0.01, no ambiguity in the sequence, trimming for illumina adaptors and hard trim of a 13bp region at the 5' extremity, resulting in final sequence length average of 60 bp. Duplicates have been removed from each library using the duplicate read removal plugin. The assembly of sequences into contigs have been performed with a wording size ranging from 20 to 54, and followed by an assembly analysis. The optimal parameters were an auto-wording of 24, bubble sizing in automatic mode. The reads were mapped back to the assembly with a mismatch, insertion and deletion cost of 3, a coverage>0.8 and similarity >0.95. A total of 28433 contigs, with a minimum length of 282 bp, a maximum of 15600bp and a N50 of 1660bp, were obtained. The assembly was then annotated using blast2GO pro version 3.0. Each contig was blast against the Arabidopsis thaliana database. For each library, the mapping was performed with the following criteria: A maximum hit per reads of 3, a similarity fraction higher than 0.95, a length fraction higher than 0.7, a mismatch, insertion and deletion cost of 3. The expression values were then calculated using the RPKM method. The dataset is composed of about 29k contigs and their sequence assembly (file RNA Seq.rar / 24 842Kb). The i-depot nummer is 071542 (26/1/2015).

- **For proteomics**

Description of the experiment

Hemp (cv. Santhica 27) hypocotyl of 6, 9, 15 and 20 days have been grown in incubator following a cycle of 16h light 25℃ / 8h night 20℃ . Each of the 5 biological replicates consisted in 20 hypocotyls randomly selected among all incubators. Sampling was performed on a single experimental batch to minimize technical variability. Samples were immediately frozen in liquid nitrogen and conserved at -80℃ before protein extraction.

Hemp hypocotyl protein extraction

Hypocotyls were crushed in fine powder using a mortar, a pestle and liquid nitrogen. Approximately 300 mg of material have been treated with ice-cold extraction buffer (TCA 20%, DTT 0.1% in acetone) and allowed to precipitate overnight at -20℃. After centrifugation (30,000g; 45 min at 4℃), the pellet has been washed three times in ice-cold acetone and dried in vacuo. Sample is solubilised in 500 µl of labelling buffer (7M urea, 2M thiourea, 4% CHAPS, 30mM Tris) for 30 mg. After centrifugation (15,000g, 15 min), the supernatant is transferred in 1.5 mL tube and pH is adjusted at 8.5 with sodium hydroxide (50mM) for optimal DiGE labelling. Protein concentration has been determined using the 2-D Quant Kit (GE Healthcare) with BSA for the standard curve according to the protocol defined by the manufacturer. Following quantification, 50 µg of protein have been labelled with Cy dyes.

The dataset is composed of about 8000 files (gathered in the files Proteomics.part1.rar, Proteomics.part2.rar and Proteomics.part3.rar / 262 691Kb). The i-depot nummers are 071536, 071537 and 071539 (26/1/2015).

- **Published knowledge:**

M. Ghoniem, J.-D. Fekete, and P. Castagliola. “On the readability of graphs using node-link and matrix-based representations: a controlled experiment and statistical analysis,” Information Visualization, vol. 4, pp. 114–135, 2005.

M. Ghoniem, H. Cambazard, J.-D. Fekete and N. Jussien. “Peeking in solver strategies using explanations visualization of dynamic graphs for constraint programming”, in Proc. of SoftVis’05, pp. 27-36. ACM, 2005.

F. McGee, and J. Dingliana. “Visualising Small World Graphs-Agglomerative Clustering of Small World Graphs around Nodes of Interest”. In GRAPP/IVAPP, pp. 678-689, 2012.

F. McGee, and J. Dingliana. “An empirical study on the impact of edge bundling on user comprehension of graphs”. AVI ‘12, pp. 620--627. ACM, 2012.

S. Zorzan, E. Lorenzetto, M. Ettorre, V. Pontelli, C. Laudanna, & M. Buffelli. (2013). HOMECAT: consensus homologs mapping for interspecific knowledge transfer and functional genomic data integration. Bioinformatics, 29(12), 1574-1576.

B. Broeksema, F. McGee, M. Calusinska, M. Ghoniem. "Interactive visual support for metagenomic contig binning," in Visual Analytics Science and Technology (VAST), 2014 IEEE Conference on , vol., no., pp.233-234, 25-31 Oct. 2014,
doi: 10.1109/VAST.2014.7042506

- **Unpublished knowledge:**

B. Broeksema, M. Calusinska, F. McGee, K. Winter, X. Goux, P. Delfosse and M. Ghoniem “ICoVeR - a novel interactive visualization interface for contig-bin verification and refinement”, submitted to Bioinformatics, Oxford University Press (under review), 2016.

F. McGee, D. Archambault, B. Hogan and H. Purchase “Effective Social Network Visualization that Supports Tasks Involving Communities” (Work in progress, title subject to change)

> This paper presents the results of three experiments that investigate tasks validated by a social scientist interested in social networks. The stimuli included comparing nodelink vs matrix visualizations and comparing using a similian backbone representation of the graph to using the full graph.

P. Murray, F. McGee and A. Forbes “A Task Taxonomy to support Visualization for the Effective Analysis of Biological Pathways” (work in progress, title subject to change)

> This paper presents a taxonomy of tasks that are regularly performed by researchers who work with biological pathway data. These tasks were generated from interviews with several domain experts. It also provides recommendations for future research directions.

Network Visualization, Visualization Evaluation, Multidimensional Multivariate data visualization, Software Engineering, Human-Computer Interaction, Bio-informatics, Systems

Biology, Omics data processing and databases, GPU programming, Social Network Analysis, Data Mining

Annex 3: Composition of the COMMITTEE

For the Establishment (LABRI): Bruno PINAUD

For EISTI (QUARTZ): Sébastien RUFIANGE

For LIST: Mohammad Ghoniem

For CVCE: Marten Düring

Annex 4: Financial annex

ANR	Staff			Equipment	Travels, missions	external services expenses	other external expenses	Administrative cost	**Total Budget**	**Total funding requested**
	Permanent	Non permanent	Internships							
LaBRI	NA	100 000	10 000	12 000	36 000	5 000	5 000	6 720	**174 720**	**174 720**
EISTI	103 000	80 000	7 000	15 000	33 000	5 000	5 000	33 300	**281 300**	**140 650**

FNR	Staff			Equipment	Travels (missions)	other external expenses	Administrative cost	**Total Budget**	**Total funding requested**
	Permanent	Non permanent	Internships						
CVCE	79 379	0	0	0	14 117	1 500	33 397	**128 393**	**111 000**
LIST	240 945	0	0	0	51 000	5 000	314 330	**611 275**	**343 000**

Annex 6: OPEN SOURCE SOFTWARE

EISTI:

Hoverball (http://www.hoverball.de/ (GNU Lesser General Public License)

LIST

ICoVeR http://bbroeksema.github.io/ICoVeR/ (GPLv3)

LABRI

Tulip 4 (GNU Lesser General Public License, http://tulip.labri.fr)

Porgy 2.0, 3.0 (GNU Lesser General Public License, http://tulip.labri.fr/TulipDrupal/?q=porgy)

Detangler (X11 license, MIT License, https://github.com/renoust/Detangler)