CLEMENT JONQUET

PHD IN INFORMATICS
SENIOR RESEARCHER, INRAE &
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CONTACT & PROFESSIONAL SITUATION

Born May 26, 1980, Nîmes (Gard), France, married, 2 children, French nationality.

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CV STRENGTHS

- **Multidisciplinary research activities:** ontologies, semantic Web, ontology repositories, biomedical informatics, semantic annotation, data integration, metadata, knowledge graphs, text mining, service-oriented computing, Web science, multi-agent systems.
- Experience in applied research (biomedicine, agronomy), software engineering & transfer skills.
- (Co)author of 165 publications or communications cumulating more than **4200 citations, including 29 international journals** in multiple domains, 6 as first author, 6 as last, and 84 conf/workshop articles.
- Collaborative work experience, **project funded research** (EU, ANR, NIH), management skills (project coordination, work-package leading, outsourcing, supervision).
- Principal investigator of 2 ANR projects (one JCJC "young researcher"), Co-PI of 2 ANR projects, recipient of **H2020 Marie Sklodowska-Curie grant**. WP lead of 1 Horizon Europe / EOSC project.
- **9 years of various academic teaching** (~1400h ~TD) in Informatics/CS to different grades.
- (Co)supervision of 27+ MSc. Students & 5 PhD candidates, 9 postdocs/researchers, 7 engineers.
- Mobility: 3-year postdoc and later 3-year visiting scholar at Stanford University.

CONTENTS

WORK EXPERIENCE

- *Starting Sept. 2022:* **Senior Researcher (DR2)**, INRAE, France.
  Mathematics, Informatics and STatistics for Environment and Agronomy (MISTEA).
- *2020-2021:* **Associate Research Scientist** (secondment), INRAE, France.
  Mathematics, Informatics and STatistics for Environment and Agronomy (MISTEA).
- *2019-2020:* **Associate Professor (MCF-HDR)**, University of Montpellier, France.
  Researcher in the Laboratory of Informatics, Robotics, and Microelectronics of Montpellier (LIRMM).
- *2015-2018*: **Visiting scholar**, Stanford University, USA.
  Center for Biomedical Informatics Research (BMIR). Working with Pr. M. A. Musen & the NCBO.
- *2010-2019:* **Assistant Professor (MCF)**, University of Montpellier, France.
  Researcher in the Laboratory of Informatics, Robotics, and Microelectronics of Montpellier (LIRMM) and teacher at Polytech Montpellier Engineering School.
- *2007-2010:* **Postdoctoral scholar**, Stanford University, USA.
  Center for Biomedical Informatics Research (BMIR). Working within Pr. M. A. Musen's group.
- *2006-2007:* Lecturer, University Montpellier 3, France (humanities and social sciences) (~ French ATER). Researcher at LIRMM.
- *2003-2006:* French government PhD grant & young lecturer at University Montpellier 2 (sciences and techniques) (~ French 'allocataire MENRT' & 'moniteur CIES').

EDUCATION

- **2019: HDR in Informatics – University of Montpellier** (French research direction habilitation)
- 2006: PhD in Informatics/Computer Science (First class with distinction) – Univ. Montpellier 2 (UM2)
- 2003: MSc in Computer Science (2.1 honours) – UM2 (~ French DEA & Maîtrise)
- 2001: BSc in Computer Science (2.2 honours) – UM2 (~ French Licence & DEUG)
- 1998: High School Diploma specialized in Maths (2.2 honours) – Uzès (Gard) (~ French Bac. S)

RESEARCH ACTIVITY

CURRENT RESEARCH ACTIVITY

I am working in the semantic Web area, **designing, implementing, experimenting and evaluating scientific methods and technologies for ontologies and their use**. I am interested in knowledge engineering and data interoperability issues, especially in the use of ontologies (or more largely any semantic resources or artefacts) for knowledge representation, extraction and sharing. I am an expert on **ontology repositories and ontology-based services** (topic of my HDR) and I develop and maintain a scientific and technical expertise on this subject especially through a partnership with Stanford BMIR and the development of the OntoPortal technology with the vision to promote data interoperability and FAIR ontologies. This fairly applicative context

allows me to investigate scientific issues in several sub-fields of **knowledge engineering**: semantic annotation, terminology extraction, linked-open data, text mining, ontology alignment, metadata languages, knowledge graphs. I have experience in the biomedical domain (NCBO & SIFR projects) –for instance on semantic annotation and indexing of biomedical text or clinical notes– and my challenge is to abstract and generalize informatics methods to other languages (e.g., French) and domains (e.g., agronomy, biodiversity). Today, **I lead the D2KAB project, a 12-partner and 35-person ANR research action** which focus on implementing methods to transform data into knowledge for agronomy and biodiversity and in which we design a vocabulary and ontology repository for agronomy and related domains (AgroPortal project). I am also involved in semantics related activities for the development of the European Open Science Cloud (EOSC), especially as WP-lead in the Horizon Europe FAIR-IMPACT project.

RESEARCH PROJECTS

- 2022-2025: **WP lead "ontology & metadata", FAIR-IMPACT** (Expanding FAIR Solutions across EOSC) – Horizon Europe CSA – 29 partners, head by I. Dillo, DANS.
- 2022-2023: **Member, VitisExplorer** (Information System to explore the agronomic and oenological potential of vine genotypes) – PNDV – 3-partner project including INRAE (Colmar & Montpellier) and IFV, head by E. Duchêne, INRAE.
- 2022-2024: **Member, DACE-DL** (DAta-CEntric AI-driven Data Linking) – ANR, 3-partner project including LIRMM & MISTEA, head by K. Todorov, LIRMM.
- 2020-2023: **Principal Investigator OntoPortal Alliance French pillar** Labex NUMEX Int. Research Team, 3 partners.
- 2020-2022: **Co-principal investigator of the FooSIN** (French section of the GO FAIR Food Systems Implementation Network) – ANR head by S. Aubin, INRAE DipSO.
- 2019-2024: **Principal investigator of D2KAB project** (Data to Knowledge in Agronomy and Biodiversity) – ANR, 12-partner, 35-person project on semantics and linked data in ag & biodiv.
- 2017-2019: Co-principal investigator VisaTM project. Text & Data mining infrastructure for French scientists. BSN-10 head by C. Nédellec, INRAE.
- 2015-2023: **Coordinator of the AgroPortal project**, a vocabulary and ontology repository for agronomy, food, plant sciences and biodiversity, partially supported by ANR (SIFR, IBC, Labex NUMEV, Labex Agro, D2KAB) and EU-MSCA SIFRm.
- 2016-2019: **Co-principal investigator of the PractiKPharma project** (Practice-based evidences for actioning Knowledge in Pharmacogenomics) – ANR head by A. Coulet, INRIA.
- 2013-2019: **Principal investigator of the Semantic Indexing of French Biomedical Data Resources** (SIFR) project – ANR *Young Researcher* & H2020 *Marie Skłodowska-Curie Action*. Building ontology-based services to leverage biomedical ontologies and terminologies in indexing, mining and retrieval of French biomedical data. Also supported by Univ. of Montpellier & CNRS, France-Stanford and Eiffel programs.
- 2012-2018: Member, Institut de Biologie Computationnelle (IBC), axe 5 (workflow & data integration) – ANR Inv. d'Avenir BioInfo. Development and use cases for AgroPortal & AgroLD, head by E. Rivals.
- 2011-2013: Member, CR2i DiagnosTIC-Santé project (Centre de Recherche et d'Innovation Industrielle) – Inv. d'Avenir PFMI. Member of the metadata repository group (multi-omics platform development).
- 2007-2010: Member, National Center for Biomedical Ontology (NCBO) –National Centers for Biomedical Computing supported by the NIH Roadmap; provider of the NCBO BioPortal, head by M. Musen.
- 2003-2007: Member, European Learning Grid Infrastructure (ELeGI) – IST IP EU (FP6).
- 2003-2004: Member, Learning Grid of Excellence Working Group (LeGE-WG) – IST STREP EU (FP5).

TEAMS & RESEARCH GROUPS

- Since Sept. 2020: **Member and coordinator of the Informatics axe, MISTEA**.
- Since Sept. 2020: Associated member of LIRMM WEB-CUBE team (Web Architecture, Semantic Web, Web of Data), head by A. Castelltort and Pr. A. Laurent.
- 2018-2020: **Member, and co-head with Pr. A. Laurent of LIRMM FADO team** (Fuzziness, Alignments, Data & Ontologies).

- 2018-2020: Associated member (INRIA delegation) of INRIA Sophia-Antipolis's WIMMICS team headed by F. Gandon (social & formal semantics on the Web, linked data).
- 2015-2018: Member of Pr. Musen's lab and until 2017 of Pr. M. Dumontier's lab at Stanford BMIR (medical informatics, knowledge representation and semantic Web (Protégé & BioPortal)).
- 2010-2018: Member of the LIRMM SMILE team (multi-agent systems, Web science, service-oriented computing, ontologies, serious games, simulation), head by F. Michel.
- 2007-2010: Member of Pr. M. Musen's lab and the NCBO team at Stanford BMIR (medical informatics, knowledge representation and semantic Web (Protégé & BioPortal)).
- March 2006: Associated member (internship) of the UK's Open University's KMI group.
- 2003-2007: Member of the LIRMM's KAYOU team (multi-agent systems, constraints, Web, Grid, service-oriented computing, ontologies, collaborative learning).

RESEARCH TOPICS

Ontologies & vocabularies, Ontology repositories, Ontology-based services, Semantic Web, Semantic annotation, Knowledge graphs, Biomedical Informatics, Ontology alignment, FAIR data & metadata, FAIRness assessment, Linked Open Data, Knowledge representation, Data integration, Information Retrieval, Text mining, Service-oriented computing, Web Science, Distributed systems, Multi-Agents Systems, Applications to biomedicine/health and agronomy/biodiversity.

GRANTS (FUNDING OBTAINED AS (CO-)LEADER)

Since 2011, I support my research independently with different grants and funding sources; I obtained approximatively 3,1M€ of research funding, as leader or co-leader, over the last 12 years.

Project (#)	Program	Date	Amount (Total)	Type of support	Collaboration	Topic
TUBO	CNRS PICS	2011-2013	18K€	operating costs	Stanford BMIR, CHU Rouen	Ontology repository interoperability
French GDR STIC-Santé collaborative actions		2012	1K€	operating costs	CHU Rouen	
Univ. Montpellier 2 scientific council PhD student grant		2012-2015	90K€	PhD fellowship	UMR TETIS	Terminology extraction and ontology enrichment
SIFR (ANR-12-JS02-0010)	ANR JCJC call 2012	2013-2017	277K€	project	Stanford BMIR, CHU Rouen, UMR TETIS	Semantic indexing, ontology repositories, knowledge representation
French CNRS, support for H2020 project preparation		2014	3K€	operating costs	CIRAD	Application for EU project related to ViewpointS
ANR IBC young researcher grant (ANR-11-BINF-0002)		2014	10K€	operating costs		Complement for SIFR. Kick off of AgroPortal
AgroPortal (ANR-10-LABX-20)	Labex NUMEV call	2014-2015	46K€	1-year engineer	Multiple	Building first AgroPortal prototype
PractiKPharma (ANR-15-CE23-0028)	ANR generic call 2015	2015-2019	137K€ (677K€)	project	LORIA (Nancy), HEGP (Paris), CHU St Etienne	Electronic health records text mining and pharmacogenomics
SIFR mobility (GA 701771)	H2020-MSCA-IF-2015	2016-2019	265K€	project	Stanford BMIR, INRIA (Wimmics)	Support for mobility in the context of SIFR & AgroPortal
e-Tera (partner of H2020 eRosa)	ANR MRSEI	2016-2017	5K€ (24K€)	operating costs	INRA-DIST, IRD	Roadmap for e-infrastructure in agri-food
AgroPortal (ANR-11-BINF-0002)	IBC of Montpellier WP5	2016-2018	100K€	postdoc	Multiple	Community support and outreach for AgroPortal
VisaTM / AgroPortal	BSN-10	2017-2018	15K€ (160K€)	postdoc	INRA-MaIAGE, CNRS-INIST	Text & data mining, semantic resources, infras
Lingua / AgroPortal (ANR-10-LABX-0001-01)	NUMEV-Agro-CEMEB Interlabex	2017	90K€	postdoc	INRA Montpellier, CNRS-CEFE	Ontology mapping lifecycle in AgroPortal. Collaboration with GACS
EUDAT Semantic Working group		2018	6K€ (30K€)	postdoc	H2020 EUDAT, eScience Factory	Ontology portal interoperability
H2020 OpenMinTed (OMTD) call for tender		2018	15K€	postdoc	H2020 OpenMinTed	Text & data mining, semantic resources
D2KAB (ANR-18-CE23-0017)	ANR generic call 2018	2019-2023	(300K€) 950K€	project	INRIA (Wimmics), INRA,	Data to knowledge in agronomy and bio-

					IRSTEA, CEFE, ACTA	diversity. AgroPortal, and linked data
Joint Montpellier-Stanford Laboratory	CNRS Int. Research Laboratory	2019-2023	~14K€ (NA)	operating cost	LIRMM, Stanford (3 teams)	Medical robotics, underwater robotics and Semantic Web
#DigitAg internship and visiting scholar fellowships		2020-2023	37K€	intern, visit	LIRMM, INRAE, EP Thiès	Agri-food semantic resources, semantic annotation
FooSIN (ANR-19-DATA-0019)	ANR flash open science 2019 call	2020-2022	17K€ (80K€)	project	LIRMM, INRAE, IRD (+CIRAD)	French participation to GO FAIR Food Systems Implementation Network
OntoPortal Alliance (ANR-10-LABX-20)	NUMEV Int. Research Team	2020-2023	80K€	project	LIRMM, Stanford, LifeWatch, INRAE	Ontology repositories for biomedicine, agronomy and ecology
DACE-DL (ANR-21-CE23-0019)	ANR generic call 2021	2022-2024	128 K€ (410K€)	project	LIRMM, MISTEA, IRIT	Data linking, semantic Web, machine learning
VitisExplorer	PNDV Appel Santé Vignoble 2021	2022-2023	77K€ (223K€)	project	INRAE Colmar, MISTEA, IFV	Data integration, data analysis, information system
FAIR-IMPACT (GA 101057344)	HORIZON-INFRA-2021-EOSC-01-05	2022-2024	665K€ (9,8M€)	project	DANS, CSC, DCC, DeiC, Trust-IT	EOSC roadmap, FAIR digital objects, FAIR semantic artefacts
#DigitAg PhD fellowships		2023-2026	60K€ (120K€)	PhD fellowship	UMR AIDA & TETIS (Cirad)	Agroecology scientific variables

PAST RESEARCH ACTIVITY

- *NCBO project & postdoctoral research:* Within NCBO I worked on semantic annotation of biomedical data with biomedical ontologies. I actively contributed to the **NCBO BioPortal** web application well used in the biomedical community. I designed an **ontology-based annotation workflow**. This workflow embeds different components (e.g., concept recognition tool, semantic expansion algorithms) in order to leverage the knowledge represented in ontologies and **facilitate biomedical data integration**. Based on this workflow, I conceptualized, designed, developed and experiment three research applications: (i) the NCBO Annotator, an ontology-based web service that can be used by the life sciences community to tag their data automatically with ontology concepts; (ii) the NCBO Resource Index, a database of open biomedical resources annotated and indexed with ontology concepts (20+ resources and 200+ ontologies at that time) which can be used to search and integrate data; (iii) the NCBO Recommender, a service which informs the user of the most appropriate ontologies relevant for their given dataset.
- *Doctoral research:* Situated at the **crossing of three important domains**: service-oriented computing (web service, components, business process, etc.), multi-agent systems (modeling, interaction, architecture) and Grid (resources sharing, Grid service, Grid computing). I proposed in my thesis a new vision for the concept of "service", called ***dynamic service generation***. This vision, based on interactions between agents (human or artificial) and relying on a Grid infrastructure, enabled dynamic construction of services based on the conversation between user & provider. Two important contributions were: (i) STROBE: an agent communication and representation model based on conversation contexts to enable interactive specification of agent capabilities; (ii) Agent-Grid Integration Language (AGIL): a grid-multiagent integrated model formalized with a description language which leverages the stateful and dynamic aspect of Grid services.
- *ELeGI project research:* I worked on a collaborative environment constructed over a Grid infrastructure based shared desktops. We experiment the environment with a community of chemists tackling the problem of **collaborative construction of an ontology**.

ONTOLOGIES, SOFTWARE DEVELOPMENT & TECHNOLOGY

- Design and part of the development of the following semantic resources:
  - Metadata for Ontology Description and Publication Ontology (MOD)
  - Brazilian Thesaurus Agrícola Nacional (THESAGRO)
  - BBCH-based Plant Phenological Description (PPDO)
  - Crop Planning and Production Process Ontology (C3PO)
  - E-Phy Ontology (E-PHY)

- Since 2013, all development projects are maintained on GitHub, as well as the issue trackers for scientific traceability, reproducibility and openness:
  - https://github.com/sifrproject
  - https://github.com/agroportal
  - https://github.com/practikpharma
  - https://github.com/d2kab
  - https://github.com/ontoportal-lirmm
  - https://github.com/FAIR-IMPACT
  - https://github.com/dace-dl
- 2013-2022: Within the *SIFR & AgroPortal and D2KAB projects*:
  - Key contributor to the OntoPortal open-source project.
  - Technical conception, design, vision and evaluation of the OntoPortal technology ("lirmm-branch" adopted by 5 partners of the OntoPortal Alliance).
  - Design of O'FAIRe, an Ontology FAIRness Evaluator methodology for semantic resources, implemented in AgroPortal and other OntoPortal installations.
  - Design of French FastContext an adaptation of the ConText text mining component for French.
  - Design, development & maintenance of the SIFR BioPortal (French medical terminologies) & AgroPortal projects.
  - Design, development & maintenance of the SIFR/French Annotator and the NCBO Annotator+ both included within the SIFR BioPortal.
  - Design of YAM-BIO a tool for ontology alignment with background knowledge resources (A. Annane's PhD project).
  - Design of Viewpoints, a graph-based system for collaborative knowledge representation and learning (G. Surroca's PhD project).
  - Design of BioTex a tool for automatic extraction of biomedical terms from text (J. Lossio's PhD project).
  - Design & development (in collaboration with LGI2P) of a semantic distance Web service.
- *BioPortal* (http://bioportal.bioontology.org/), a web repository of biomedical ontologies developed by NCBO. I actively contributed to the evolution and design to the core NCBO BioPortal services and participate in the support to the community.
- *NCBO Annotator, Resource Index & Recommender* (BioPortal URL + /annotator, /resources, /recommender). I was the main researcher (along with N. Shah, PhD, MD) and architect of these 3 services (prototyping, testing, evaluation, QA and deployment). I supervised 3 part time software developers working on these projects during 2 years.
- *STROBE model,* prototype implementation of the multi-agent model designed during my PhD project.
- Experimentation with the Grid Shared Desktop developed within the EleGI project.

SCIENTIFIC INFLUENCE AND DISSEMINATION

SEMINARS & INVITED PRESENTATIONS

- Over the last 14 years, I have been invited for **5 keynotes at conference**, 15 invited talks, 26 project or lab seminars, 15 team or group seminars, and a few miscellaneous talks as described after.
- Since 2016, **I regularly organize tutorials on the use of ontology and ontology-based services** with the platforms developed in my projects. I regularly teach to MSc. Students (e.g., U. Montpellier) and I have been invited to several summer schools, tutorial or training events (10 in last 5 years) as described after.
- I have **26 presentations on SlideShare cumulating ~15000 views.**

AWARDS & DISTINCTIONS

- Best paper award at the *32èmes Journées Francophones d'Ingénierie des Connaissances* (IC 21), July 2021.
- 2nd best poster award at the 14th Research Data Alliance plenary meeting (RDA P14), Oct. 2019.
- Shared best paper award at 6th *French Ontology Conference* (JFO 2016), Oct. 2016.

- Recipient of the **EU Marie Sklodowska-Curie Action (GF-IF) program** (2016-2019). The MSCA program is very selective with a success rate of around less than 10% on Individual Fellowships (GF).
- 1st Prize at the 2nd BD2K & 4th Network of BioThings Hackathon, Stanford, Nov. 2015.
- French ministry distinction, *Prime d'Excellence Scientifique* (PES) 2013-2015 (stopped with mobility).
- Recipient of the French National Research Agency **(ANR) Young Researcher program**, 2012. The program (JCJC) is very selective with less than 17% success rate in 2013.
- Honorable mention award at *3rd ACM Int. Conference on Web Science* (WebSci 2011), June 2011.
- Selected in Pr. Russ Altman's 2011 Year in Review for journal article about biomedical ontology recommendation. *AMIA Translational Bioinformatics Summit* (AMIA-TBI 2011), March 2011.

- **Semantic Web Challenge 2010 winner** (with the NCBO team) at 9th *Int. Semantic Web Conference* (ISWC 2010) with the NCBO Resource Index, Nov. 2010.

COLLABORATIONS & WORKING GROUPS

AT MISTEA

In the informatics axe on ontology and knowledge engineering (C. Roussey), data linking and knowledge graphs (D. Symeonidou), semantics and ontologies related to grapevine (A. Charleroy & IFV), ontology-based software engineering and use of ontologies with OpenSILEX (A. Tireau, A Charleroy) and many other matters related to knowledge engineering (P. Neveu).

AT LIRMM

A part from the contributions and exchanges related to the multi-agent systems & interaction research group "SMILE" (S. Cerri), I have strongly interacted and worked with members of other teams, especially the data and text mining "ADVANSE" team (S. Bringay, M. Roche, M. Teisseire); the ontology alignment & linked data "FADO" team then "WEB3" (Z. Bellahsene, K. Todorov, F. Scharffe); the big data and scientific workflow "ZENITH" INRIA team (P. Valduriez, P. Larmande).

WITHIN THE MONTPELLIER RESEARCH ECOSYSTEM

During SIFR, I co-supervised 2 PhD students with researchers from UMR TETIS (M. Roche, M. Teisseire, P. Lemoisson) between 2011 and 2015. The AgroPortal initiative rapidly found an echo locally that have encouraged us to concretize the project in Montpellier. Since 2014, it brought me to collaborate with UMR DIADE IRD (P. Larmande) on agronomic linked data (AgroLD project) and AgroPortal; CIRAD (M. Ruiz), Bioversity International (E. Arnaud), INRAE (P. Neveu, P. Buche), CNRS-CEFE (E. Garnier) on several use cases for AgroPortal. More recently, I have started a partnership and exchanges with ANR *Convergence Institute* #DigitAg (led by V. Bellon-Maurel) for data interoperability projects on digital agriculture. With #DigitAg and HE InterCropValues project, I co-supervise another PhD with CIRAD (UMR TETIS (M. Roche) and AIDA (S. Auzoux)).

NATIONAL COLLABORATION

The collaborations mainly happened during formal projects. Within SIFR, I started the project with the CISMeF group of CHU Rouen (S. Darmoni), and then had multiple interactions with other medical informatics organizations such as INSERM LIMICS (J. Charlet), related to French biomedical ontologies, CHU Nancy (N. Girerd) on knowledge extraction form electronic health records. Within the ANR PractiKPharma consortium, led by LORIA (A. Coulet), I also collaborate with HEGP hospital (B. Rance & A. Burgun) and CHU St Etienne (C. Bousquet). AgroPortal found interests with other INRAE research groups (C. Pichot, C. Nédellec, C. Pommier) but also with INRAE's DipSO (S. Aubin, O. Hologne, E. Dzalé) with who I closely collaborate since 2016 on agri-food data interoperability within AgroPortal, VisaTM, eRosa/eTera projects and several working groups of the Research Data Alliance. Since 2017, both within VisaTM and the GDR SemanDiv, I exchange with CNRS-INIST (C. Francois, D. Vachez) on accessing and sharing semantic resources.

- *Since 2022*: DataTerra research infrastructure (G. Alviset, C. Pierkot, F. Huynh) and HE FAIR-EASE project (A. Rizzo).
- *Since 2021*: National partners of the OntoPortal Alliance: Ecole Nat. de Tarbes (M-H. Karray), and since 2022, Observatoire de Paris (B. Cecconi).
- *Since 2021*: Partners from DACE-DL consortium: IRIT (C. Trojhan, O. Teste) and LIRMM (K. Todorov).

- *Since 2019*: Partners from D2KAB consortium: ACTA (F. Brun), ex-IRSTEA (C. Roussey), CNRS I3S & INRIA-Wimmics (C. Faron-Zucker, F. Michel, O. Corby).
- *Since 2017*: CNRS InEE GDR SemanDiv (E. Garnier) which focus on semantic issues for biodiversity.
- **Current or past industrial exchanges include**: Sanofi (T. Pages), Ontologos (C. Million), Logixys/Algo.solutions (P. Dugénie), Mondeca (F. Amardeilh), eScience Data Factory (Y. Le Franc), API-AGRO (T-P. Haezebrouck), Elzeard (F. Amardeilh).
- *2003-2006:* In the context of French STIC Santé working group or as a member of the French MFI working group (Formal Model of Interaction).

INTERNATIONAL COLLABORATION & WORKING GROUPS

The context of AgroPortal projects and application to agriculture brought me to join and work with several key actors for data sharing and semantics in agri-food and biodiversity. Often within **international working groups (e.g., of the Research Data Alliance)**, such as:

- *Since 2023*: Embrapa, Brazil (M. Ambrosio Telles) and the GTermos group.
- *Since 2020*: International partners of the OntoPortal Alliance: LifeWatch ERIC (N. Fiore), CNR (I. Rosati), Fraunhofer Materials (A.-A Todor), NFDI4Biodiversity (N. Karam)
- *Since 2023*: Horizon Europe EOSC project Technology Group and Opportunity Areas 2 (Metadata, Ontologies & Interoperability) gathering members of projects funded in the INFRA-EOSC program.
- *Since 2022:* Horizon Europe FAIR-IMPACT project partners and others in the context of EOSC.
- *Since 2017:* RDA Vocabulary and Semantic Services Interest Group. Co-leader of the 'ontology metadata' task group, then member of the I-ADOPT working group.

Other ongoing collaborations:

- *2018-2019:* With multiple European consortia to prepare unsuccessful **responses to H2020 following calls**: DT-ICT-08-2019, INFRAEOSC-02-2019, DT-SFS-26-2019 and MSCA-ITN-2019&2020.
- *Since 2016:* Indian Statistical Institute (B. Dutta), on ontology metadata.
- ***Since 2011:* Stanford BMIR (M. Musen), with the Protégé & NCBO groups**. This long-lasting collaboration supported by different programs allowed me to develop an expertise in Montpellier on ontology services and repositories.

Past collaborations:

- *2020-2021*: H2020 FAIRsFAIR project and especially T2.2.
- *2019-2021:* GO FAIR Food Systems Implementation Network.
- *2017-2019:* H2020 eRosa project (e-infrastructure Roadmap for Open Science in Agriculture) community and especially with INRAE, Wageningen UR, AgroKnow and Food Agriculture Organization.
- 2018: H2020 OpenMinTeD (text mining platform) H2020 project in the context of 2nd call for tender.
- *2016-2018:* GACS working group (J. Keyser, I. Subirats), design of the Global Agricultural Concept Scheme based on FAO's Agrovoc, USDA Nat. Agriculture Library, and CAB Int. thesauri.
- *2016-2018*: AgBioData which gathers model organism databases in agriculture (mostly in the US).
- *2016-2008:* Godan (Global Open Data for Agriculture and Nutrition) Action project and FAO (V. Pesce) on the Agrisemantics Map of Data Standards.
- *2016-2019:* RDA Agrisemantics (S. Aubin, C. Caracciolo) working group with the IG on agriculture data.
- *2016-2017:* RDA Wheat Data Interoperability working group (E. Dzalé), as a use case for AgroPortal.*2015-2016:* Stanford BMIR (M. Dumontier) as a member of the research group.
- *2016:* Univ. of Sao Paulo and Univ. Fed. de Tocantins (D. Prata) for a joint CAPES-COFECUB project on spatial and temporal data about biodiversity in Amazonians conservation.
- *2007-2010:* NCBO collaborators and community: Univ. of Colorado School of Medicine (L. Hunter), Univ. of California San Francisco (I. Sim), Medical College of Wisconsin (S. Twigger), Wright State Univ. (A. Sheth), Goal: leverage NCBO solutions within biomedical sciences scenarios.

- *2004-2006:* A. Krief's lab, Notre Dame de la Paix Univ., Namur, Belgium. Collaborative construction of ontology for chemistry.
- *2003-2006:* Knowledge Media Institute (KMI), Open Univ., Milton Keynes, UK (E. Motta, J. Domingue, M. Eisenstadt). Goal: using agent approach for Grid services and collaboration.

PROFESIONNAL RESPONSABILITIES

RESEARCH OR WORKING GROUP

- Start. 2020: **Coordinator of Informatics axe at MISTEA** (7 permanents, 1 invited researcher, 18 persons total). As "coordinator" I am mostly representing the team in the institute governance bodies and take over some global responsibilities:
  - Since 2022: REU (Research Unit contact point for European project).
  - Since 2022: Representation of MISTEA in U. Montpellier's MIPS Pole.
  - Since 2023: INRAE working group for the 2nd strategical objective of INRAE's Data Plan.
- 2019-2020: **Co-head of FADO research group at LIRMM** with Pr. A. Laurent (6 permanents, 10-12 persons total). I was mostly representing the team in the lab governance bodies (team councils, informatics department, doctoral school).
- 2019-2023: Head of ANR D2KAB's steering committee (12 persons) as project coordinator.
- 2017-2019: Co-chair of the 'ontology metadata' task group of the RDA Vocabulary and Semantic Services Interest Group (15-20 persons).
- **2012-2024: (Co)supervision of 27+ MSc. Students, 5 PhD, 8 postdocs, 7 engineers** detailed after.
- 2010-2013*:* Organizer of the group of interest Web Science Montpellier Meetup (with a series of events).

MISSIONS & EXPERTISE

- 2024: Reviewer of J. Andersen's PhD manuscript, INSA Lyon, May 2024 (inv P. Lamarre & S. Cazalens)).
- 2023: Reviewer of F. Loffler's PhD manuscript, Jena University, June 2023 (invited by B. Konig-Ries).
- 2022-2023: Member of the COER (Research Evaluation COmmittee) of ExpoSUM.
- 2021 & 2022: **Vice-President French ANR expert committee in Artificial Intelligence** (CE23).
- 2022: Member of the Crop Ontology Strategy Advisory Committee.
- 2020-2024: French Digital Agriculture Convergence Institute (DigitAg) Evaluation Committee.
- **Project proposal reviewing and evaluation** for French ANR (*3) and US NIH (*1).
- Jury member for permanent researcher/engineer hiring at IUT Béziers (2014), INRAE (2020, 2024), CIRAD (2022).
- 2020: Reviewer of O. Alqawasmeh's PhD manuscript, Saint-Etienne, Sept. 2020 (invited by M. Lefrancois).
- 2019: Examiner in A. Laadhar's PhD defense, IRIT, Toulouse, Sept. 2019 (invited by O. Teste).
- 2013: French-US bioinformatics collaboration committee member, supervised by A. Viari (INRIA) for the Ministries of Higher Education & Research and Foreign Affairs.
- 2011-2015: Member of the expert pool of the French Ministry of Higher Education & Research for evaluating research & development tax credit (French CIR and JEI).
- **Article rewiewing activity for 16 international journals, 25 different international workhop or conference series & 8 national workshop** or conference series. Detailled after.

TEACHING & OTHER RESPONSIBILITIES

- 2012-2015: Member of Univ. of Montpellier's council for Information and Communication Technologies in Education (TICE). Representative for Polytech Montpellier.
- 2012-2015: **Head of Polytech Montpellier iPad for students project**. I 'led' a group of 70 teachers interested in pedagogical innovations using ICT and iPad, in and out of the classroom.
- 2012-2015: **Responsible of the last year of the "Informatics & Gestion" curriculum at Polytech** Montpellier Engineering School (eq. Master degree).

- 2004-2005: Elected representative of computer science PhD students at LIRMM. Interesting activity to understand the organization and operation of a research lab.

SUPERVISION OF RESEARCH ACTIVITIES

- 2024: Supervision & management of B. Kihal (engineer, AgroPortal).
- 2024: Co-supervision of I. E. Bourouche (eng. students, D2KAB) with S. Bouazzouni.
- 2023-2026: Co-supervision of O. Mechhour, **PhD candidate**, (#DigithAg, HE InterCropValues) with M. Roche and S. Auzoux.
- 2023-2025: Supervision & management of N. Grau (**research & project management**, FAIR-IMPACT).
- 2023-2024: Supervision & management of S. Mhedhbi (engineer, AgroPortal).
- 2023: Co-supervision of H. Djebabria, Z.E. Haddad, B. Kihal (eng. students, D2KAB) with S. Bouazzouni.
- 2022-2023: Co-supervision of R. Salazar (**postdoc**, DACE-DL project) with D. Symeonidou.
- 2022: Supervision of A. Juan (eng. Student Epitech Montpellier).
- 2022: Co-supervision of M. Bouchnaf and W. Abidi (eng. student, INP-ENSIMAG) with S. Bouazzouni.
- 2021-2025: Supervision & management of S. Bouazzouni (engineer, D2KAB & OntoPortal).
- 2021-2024: Co-supervision of B. Darnala, **PhD candidate**, (CIFRE, SME Elzeard) with K. Todorov & F. Amardeilh on machine learning and semantics approaches for agroecology knowledge graphs.
- 2021: Supervision of S. Bouazzouni (eng. student, D2KAB).
- 2021: Supervision of N. Lamrabet (eng. student, D2KAB) with E. Amdouni.
- 2020-2021: Supervision of A. Guissé (visiting scholar, D2KAB).
- 2020: Supervision of L. Sardois (eng. student, D2KAB) with A. Castelltort.
- 2020: Supervision & management of J. Lamarque (engineer, D2KAB).
- 2019-2021: Supervision of E. Amdouni (**postdoc**, D2KAB).
- 2019-2020: Supervision of A. Laadhar (**postdoc**, D2KAB).
- 2019: Supervision of M. Mirzapour (**postdoc**, PractiKPharma).
- 2018-2019: Supervision of E. Abrahao (**postdoc**, AgroPortal project) with K. Todorov & P. Neveu.
- 2017: Co-supervision of S. Zevio (MSc student, U. Montpellier) with S. Bringay & A. Tchechmedjiev.
- 2017: Supervision of C. Goehrs (MD & MSc. Student, U. of Bordeaux).
- 2016-2017: Supervision of A. Abdaoui (**postdoc**, PractiKPharma).
- 2016-2018: Co-supervision of A. Tchechmedjiev (**postdoc**, PractiKPharma) with S. Bringay.
- 2016: Co-supervision of S. Eholié (MSc student, U. of Nantes) with S. Bringay & M-D. Tapi-Nzali.
- 2015-2018: Co-supervision of A. Annane, **PhD candidate**, (cotutelle, Eiffel fellow) with Z. Bellashene & F. Azouaou (ESI Algeria)) on ontology alignment (SIFR & PractiKPharma).
- 2015: Co-supervision of C. El Ghandour & M. Serhani (MSc students, U. Montpellier) with J-A. Lossio on prototyping BioTex in SIFR BioPortal.
- 2015-2018: Supervision & management of A. Toulet (research engineer, AgroPortal).
- 2015-2017: Supervision & management of V. Emonet (research engineer, SIFR).
- 2015: Supervision of J. Diener (research engineer, IBC project) with P. Larmande.
- 2014: Co-supervision of P. Burc and O. Duplouy (MSc students, U. Montpellier) with S. Harrispe (LGI2P, Nimes) on semantic distances.
- 2014: Co-supervision of L-H. Méric (eng. student, IMT St Etienne) with P. Lemoisson and G. Surroca.
- 2014: Supervision of S. Melzi (MSc student, U. Montpellier).
- 2014: Co-supervision of A. Dia (MSc student, U. G. Berger, Senegal) with P. Lemoisson and G. Surroca.
- 2013: Co-supervision of K. Cauchois (MSc. student, U. Rouen) with S. Darmoni (CHU Rouen) on exporting HeTOP's content to OWL.

- 2013-2017: Co-supervision of G. Surroca, **PhD candidate**, with P. Lemoisson and S.A. Cerri, on graph-based social/semantic data knowledge representation with Viewpoints.
- 2013: Supervision of K. Bouarech, (MSc student, U. Montpelier).
- 2012-2015: Co-supervision J-A. Lossio-Ventura, **PhD candidate**, with M. Roche and M. Teisseire on biomedical terminology extraction (SIFR).
- 2010: Co-supervision of R. Castro & B. Paiva (MSc students, U. Montpellier), with S.A. Cerri (collaboration Stanford-LIRMM) on semantic distances and web service composition.
- 2010: Supervision of T. Tenneti (MSc student, Stanford) on concept recognition.
- 2009: Co-supervision of A. Ghazvinian (MSc student, Stanford) with N. Noy on ontology alignment.
- 2009: Co-supervision of G. Parai (MSc student, Stanford) with N. Shah on lexicon building.
- 2009: Co-supervision of N. Bhatia (MSc student, Stanford) with N. Shah on concept recognition.
- 2006: Co-supervision of F. Duvert (MSc student, U. Montpellier), with S.A. Cerri agent-grid ontology.
- 2005: Co-supervision of a group of 3 BSc. Students (U. Montpellier) with R. Colleta on web service and constraint programming.
- 2005: Co-supervision of a group of 3 BSc. Students (U. Montpellier) with S. Cerri on STROBE & MadKit.

PROGRAM CHAIRING AND ORGANIZATION

- Steering committee *1st FAIR principles for Ontologies and Metadata in Knowledge Management* (FOAM), a new workshop merging Onto4FAIR, CMOMM4FAIR and FOHTI.
- Organization of D2KAB final event and public meeting, Montpellier & Online, June 2024 (40 participants).
- Co-organization of the *PhenoHarmonIS Workshop 2024*, Montpellier, May 2024 (90 participants).
- Co-organization of the OA2 meeting at the *2024 EOSC Winter School*.
- Co-organization of the *FAIR-IMPACT Open Call of Support – FAIRness Assessment Challenge*, Online, Oct-Nov. 2023 (25 participants).
- Co-organization of the *FAIR-IMPACT Semantic Artefact Governance workshop*, Sept. 2023, Lecce and online (40 participants).
- Co-organization of the *2nd OntoPortal Workshop*, Sept. 2023, Lecce (25 participants).
- Co-organization of 2nd and 3rd *Workshop on Ontologies for FAIR and FAIR Ontologies* (Onto4FAIR), July & Sept. 2023, at FOIS 2022, Sherbrooke, Canada & SEMANTICS 2022, Leipzig, Germany (20 participants).
- Co-organization of the *FAIR-IMPACT Workshop of Why Mappings Matter and how to make them FAIR?*, April 2023, Online (80 participants).
- Co-organization of the *FAIR-IMPACT Synchronisation Force 2022, Session 4 Metadata, semantics and interoperability*, Online, Nov. 2022 (57 participants).
- Organization of the *1st OntoPortal Workshop,* Sept. 2022, Montpellier (20 participants).
- Organization of the 3rd D2KAB-FooSIN FAIRness assessment AgroHackathon in Aug. 2022 (25 competitors, 6 coaches).
- Co-organization of 1st *Workshop on Ontologies for FAIR and FAIR Ontologies* (Onto4FAIR), Sept. 2022, at Semantics 2022, Vienna, Austria.
- Steering committee 3rd *Int. Workshop on Semantics for Biodiversity* (S4BIODIV 2021) in conj. with ICBO 2021.
- Co-organization of the *Biodiversity and Ecology track* at OAEI 2020. 7 competitors.
- Organization of the 2nd IBC-NUMEV AgroHackathon in July 2017, 15 participants.
- Organization of the 1st IBCNUMEV AgroHackathon in June 2016, 30 participants.
- Co-chair of *Semantics for Food, Agriculture, Environment and Nutrition* workshop (SemFAEN 2018) at Semantics 2018, Sept. 2018, Vienna, Austria.
- Co-session chair *Semantics for biodiversity and ecosystem research* at ICEI 2018.
- Co-program chair and organization committee of 2nd *Int. Workshop on Semantics for Biodiversity* (S4BIODIV 2017) at ISWC 2017, Nov. 2017, Vienna, Austria. ~30 participants.

- Participation to the organization (with S. Bringay) of 27èmes *Journées francophones d'Ingénierie des Connaissances* (IC 2016), June 2016, Montpellier, France, ~100 participants.
- Co-program chair (with D. Cassagne) of the "return of experience" track of the *French ICT in Education Conference* (TICE 2014), Nov. 2014, Beziers, France. ~100 participants.
- **Local chair (with F. Scharffe) of 10th *Extended Semantic Web Conference* (ESWC 2013), May 26-30 2013, Montpellier, France. ~350 participants**.
- Co-program chair and organization committee of 1st *Int. Workshop on Semantics for Biodiversity* (S4BIODIV 2013) at ESWC 2013, May 2013, Montpellier, France. ~40 participants
- 2010-2013*:* Organization of 1st Web Science Montpellier Meetup workshop in Montpellier, France, May 13th 2011. 25 participants. Other smaller events have followed.
- Participation to the organization of local workshops (OTM 2006 & ALCAA 2004).

ARTICLE REVIEWING

Database (Oxford Academic), Data Intelligence (open access), Semantic Web Journal (IOS Press), Applied Ontology (IOS Press), Journal of Web Semantics (Elsevier), Bioinformatics (Oxford Academic), BMC Bioinformatics (BioMed Central), Knowledge-Based Systems (Elsevier), Journal of Biomedical Informatics (Elsevier), Journal of Biomedical Semantics (BioMed Central), Access (IEEE), IMIA Year Book (Schattauer), French Technique et Science Informatique (Hermès), French Revue d'Epidémiologie et de Santé Publique (Elsevier), Service Oriented Computing and Applications journal (Springer), Grid Computing and Multi-Agent Systems journal (Serials Publications)

INTERNATIONAL PROGRAM COMMITTEES

- Int. Conference on Knowledge Engineering and Knowledge Management (EKAW 2020, 2022, 2024).
- 1st Workshop on Controlled Vocabularies and Data platforms for Smart Food Systems (SmartFood 2023).
- International Conference on Biomedical Ontology (ICBO 2022).
- 1st-3rd Int. Workshop on Semantics for Biodiversity (S4BIODIV 2013, 2017,2021).
- International Conference on Formal Ontology in Information Systems (FOIS 2021, 2023, 2024).
- International Symposium on Information Management & Big Data (SIMBig 2014-2021).
- International World Wide Web Conference (WWW 2018-2019, WWW 2012 (Demo track))
- International Semantic Web Conference (ISWC 2017-2018, 2023, 2024).
- European/Extended Semantic Web Conference (ESWC 2017, 2019, 2020, 2023).
- European Federation for Information Technology in Agriculture, Food & Environment (EFITA 2017).
- 1st Language, Data and Knowledge conference (LDK 2017)
- 11th-18th BioOntologies SIG (BioOntologies 2009-2017).
- Semantic Web Applications and Tools for Life Sciences (SWAT4LS 2015-2016-2018, 2023).
- 11th &12th African Research in Computer Science and Applied Mathematics (CARI 2014-2016)
- 1st Computational Semantics in Clinical Text (CSCT 2013) workshop
- 4th Int. Conference on Web Science (WebSci 2012).
- 1st & 2nd Int. Workshop on Web Science & Information Exchange in Medical Web (MedEx 2010-2011).
- 9th, 11th & 13th Int. Conference on Intelligent Tutoring (ITS 2008, ITS 2014, ITS 2012).
- 4th & 5th Int. KES Symposium on Agents & MAS Technologies & Applications (AMSTA 2010-2011).
- Workshop on Ontology Repositories for the Web (SERES 2010).
- 1st Int. Workshop on User-generated Services (UGS 2009).
- Workshop Extending Database Technology for Life Sciences workshop (EDTLS 2009).
- Int. Workshop on Service-Oriented Computing: Agents, Semantics, and Engineering (SOCASE 2009).

NATIONAL PROGRAM COMMITTEES

- 23ème conférence francophone sur l'Extraction et la Gestion des Connaissances (EGC 2023).

- Journées francophones d'Ingénierie des Connaissances (IC 2013-2024).
- 1er & 2ème Atelier Web des données (AWD 2019, 2020).
- Workshop Knowledge Engineering & Health (IA & Santé 2018-2021, SIIM 2015-17, ICSanté 2012-2016).
- Workshop sources & data integration in agriculture, food, environment ontologies (IN-OVIVE 2017)
- 6èmes Journées francophones sur les Ontologies (JFO 2016).
- 1er Atelier Ontologies et Jeux de Données pour évaluer le web sémantique (OJD 2012).
- 1er-3ème Atelier Quantité et Robustesse pour le Web de données (QetR 2011-2013).
- 1er Atelier Extraction des Connaissances et Contextualisation (ExCoco 2011).
- 7ème Colloque Agents Logiciels, Coopération, Apprentissage, Activité (ALCAA 2004).

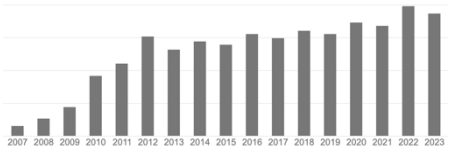
PUBLICATION SYNTHESIS

ACCESS & CITATIONS

My complete list of publications is described below or in the HAL publication archive. I try to publish in open access journals (gold open access), but when not the case, a **PDF is always available** for every document (green open access) on HAL. Other incomplete listings include: Google Scholar, ResearchGate, DBLP, PubMed.

The first author is always the "main" author. The last author is generally the supervisor. Most of publications or communications **(166 total)** have been peer-reviewed (if not explicitly mentioned), including:

- **29 journal** (6 as first author, 4 as second author, 4 as last author).
- 77 articles in **international conferences (32)**, international **workshops (20)** or national **(French) conferences (25)** all with proceedings.
- **33 posters or demos** in international venues.
- 72 are international publications; most have been written in a collaborative context; more than 2/3 have been written by person(s) under my (co)supervision.
- 7 publications are the result of a working group (e.g., RDA), or a community paper.



Overall, my publications cumulate **4200 citations** as of Google Scholar (June 2024); including +1200 citations for publications as first author. Evolution of my citations (as of Google Scholar) is given aside.

PUBLICATION CONTEXT AND DOMAINS

- Biomedical Informatics: 2 recent articles in *Journal of Biomedical Informatics* (Elsevier, IF 6.32), 4 articles in *BMC Bioinformatics* (IF 3.24, CORE A) **cumulating 332 citations**, 1 in *Nucleic Acids Research* (Oxford, IF 10.16) with **1145 citations**, 2 application notes in *Bioinformatics* (Oxford, IF 6.94), 2 articles (one with **363 citations**) at *AMIA Symposiums* which is one of the best venues to publish in this field. 2 articles **(**one with **109 citations)** in *BMC Biomedical Semantics* (IF 2.41).
- Semantic Web: 3 articles & 4 posters/demos (all cumulating **241 citations**) in *Int. Semantic Web Conference (CORE A)*, the main conference in the domain or 2 articles in EKAW another important conference. Plus, the 1st prize at the 2010 Semantic Web Challenge and a corresponding publication (**124 citations**) in *Journal of Web Semantics* (Elsevier, IF 2.76). One awarded paper at Web Science Conference.
- NLP, text mining & information retrieval: 4 conferences or workshop articles related to text mining and language in biomedicine (LREC'16, *PoITAL'14, IDEAS'14, JADT'14, LBM'13).* One article in *Information Retrieval* (Springer, IF 2,29) with **76 citations** and one in *Knowledge Discovery in Bioinformatics* (IGI Global) both on terminology extraction.
- Agronomy & agriculture: multiple poster-demos and workshop papers recently published in this new field of application. One article as first author in *Computers and Electronics in Agriculture* (Elsevier, IF 5.57) with **92**

citations. Two group articles in prestigious journals: *Database* (Oxford, IF 3.45) and *PLoS One* (PLoS, 3.24). One recent chapter in a book in the *Series in Agricultural Science* (Burleigh Dodds).

- Distributed systems: 1 article in the reference journal for the topic of agent-grid integration, *Multiagent and Grid systems* (IOS Press, CORE B) as well as 1 article in the *Int. Workshop on Service-Oriented Computing: Agents, Semantics, and Engineering*. Plus 1 article in *Applied Artificial Intelligence* (Taylor & Francis, IF 1.17, CORE B) with **27 citations**.
- French conferences: Such as *Journées francophones d'Ingénierie des Connaissances*, or *d'Informatique médicale* or du *Traitement Automatique des Langues Naturelles*, or *sur les Systèmes Multi-Agents*, or *des Ontologies* or *de Recherche d'Information et Applications*. 11 French publications (over 24) are direct French versions of English papers; others are usually preliminary work.

SIX SELECTED PUBLICATIONS

Hereafter, underlined names are co-authors who worked under my supervision.

- [CJ5] Andon Tchechmedjiev, Amine Abdaoui, Vincent Emonet, Stella Zevio, and **Clement Jonquet**. SIFR Annotator: Ontology-Based Semantic Annotation of French Biomedical Text and Clinical Notes. *BMC Bioinformatics*, 19:405–431, December 2018. **12 citations.**

  https://dx.doi.org/10.1186/s12859-018-2429-2

This paper is one of the main results of the SIFR project: it is the presentation and evaluation of the SIFR Annotator. This work originally founds its source in my postdoctoral research activity when I work on semantic annotation.

- [CJ8] **Clement Jonquet**, Anne Toulet, Biswanath Dutta, and Vincent Emonet. Harnessing the power of unified metadata in an ontology repository: the case of AgroPortal. *Data Semantics*, pages 1–31, August 2018. **13 citations.**

  https://dx.doi.org/10.1007/s13740-018-0091-5

This journal paper synthetizes our work on ontology metadata between 2016 and 2018. It presents an analysis of practices, then a unified ontology metadata model and its implementation and exploitation in the AgroPortal ontology repository.

- [CJ13] **Clement Jonquet**, Anne Toulet, Elizabeth Arnaud, Sophie Aubin, Esther Dzalé-Yeumo, Vincent Emonet, John Graybeal, Marie-Angélique Laporte, Mark A. Musen, Valeria Pesce, and Pierre Larmande. AgroPortal: an ontology repository for agronomy. *Computers and Electronics in Agriculture*, 144:126–143, January 2018. **92 citations.**

  https://dx.doi.org/10.1016/j.compag.2017.10.012

This journal paper presents AgroPortal, along with its original driving use cases and early adopters. It is a perfect index to work done in this project on ontology metadata, mappings, annotation, etc. This paper and the four poster-demo articles about AgroPortal cumulates today 134 citations.

- [CJ18] **Clement Jonquet**, Paea LePendu, Sean Falconer, Adrien Coulet, Natalya F. Noy, Mark A. Musen, and Nigam H. Shah. NCBO Resource Index: Ontology-Based Search and Mining of Biomedical Resources. *Web Semantics*, 9(3):316–324, September 2011. 1st prize of Semantic Web Challenge at the 9th Int. Semantic Web Conference, ISWC'10, Shanghai, China. **124 citations.**

  https://dx.doi.org/10.1016/j.websem.2011.06.005

This journal paper is one of the main results of my postdoc. It was my first contact with big biomedical data, establishing a semantic index for a large number of continuously evolving datasets and ontologies. Even if not explicitly used anymore, the NCBO Resource Index illustrated the challenges of ontology-based indexing at large scale as acknowledged by the 1st price at the Semantic Web Challenge organized at ISWC 2010. The three publications on this topic cumulate 322 citations.

- [CJ22] Natalya F. Noy, Nigam H. Shah, Patricia L. Whetzel, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Daniel L. Rubin, Margaret-Anne Storey, Christopher G. Chute, and Mark A. Musen. BioPortal: ontologies and integrated data resources at the click of a mouse. *Nucleic Acids Research*, 37(web server):170–173, May 2009. **955 citations.**

  https://dx.doi.org/10.1093/nar/gkp440

This journal paper is the reference paper for the NCBO BioPortal ontology repository. The portal is now the most comprehensive and largely used ontology and terminology repository in biomedicine.

- [CJ47] **Clement Jonquet**, Nigam H. Shah, and Mark A. Musen. The Open Biomedical Annotator. In *American Medical Informatics Association Symposium on Translational BioInformatics, AMIA-TBI'09*, pages 56–60, San Francisco, CA, USA, March 2009. **311 citations.**

  https://hal.archives-ouvertes.fr/hal-00492024

This conference article was the first paper presenting the NCBO Annotator, the implementation of the methodology designed during my postdoc for annotating textual data with ontology concepts. The three publications on the NCBO Annotator cumulate today 567 citations.

DETAILED SEMINARS & INVITED PRESENTATIONS

TRAINING & TUTORIAL EVENTS

- Horizon Europe FAIR-IMPACT FAIRness Assessment Challenge, Oct.-Nov. 2023.
- LifeWatch Semantic Academy, Lecce, Sept. 2023 (invited by N. Fiore).
- 9th EGC Winter School 2023, Lyon, Jan. 2023 (invited by C. Faron-Zucker).
- Int. SemTech training workshop, ISI, Bangalore, Feb. 2021 (invited by B. Dutta).
- ENVRI-FAIR First training event, Dresden, Feb. 2020 (invited by M. Hellström).
- LifeWatch/ENVRI Plus Data FAIRness Int. Summer school, Lecce, July 2019 (invited by N. Fiore).
- Lecture on ontology-based services, DECOL Master, U. Montpellier (invited by F. Ulliana), April 2019.
- E-ENVIR CNRS thematic school, Gif-sur-Yvette, Oct. 2019 (invited by C. Martin).
- Tutorial on ontology management & services, CNRS INIST, Nancy, Dec. 2017 (invited by C. Francois).
- Tutorial SIFR BioPortal & AgroPortal, ontology management & services, IC 2016, Montpellier, June. 2016.
- Tutorial on the use iPad in education at Forum TIC's, Mons, April 2015 (invited by B. Champagne).

SCIENTIFIC SEMINARS & INVITED TALKS

- PhenoHarmonIS, May 2024 (invited by E. Arnaud).
- Embrapa sede seminar, Brazilia, April 2024 (invited by M. Telles).
- GO-FAIR Agro Brazil network seminar, Oct. 2023 (invited by M. Telles).
- INRAE Semantic Linked Data, Cap d'Agde, Oct. 2023 (invited by. P. Neveu & P. Buche).
- EOSC Symposium FAIR, Data Quality Management and Research Metrics Assessment, Madrid, Sept. 2023 (invited by C. Schubert).
- 6th Annual AGROVOC Editorial Community Meeting, Freising, July 2023 (invited by I. Subirats).
- Horizon Europe TITAN project webinar, July 2023 (invited by P. Neveu).
- H2020 OntoCommons 2nd Global Workshop, June 2023 (invited by J. Breslin)
- IEA Wind Task 43 Metadata Challenge Webinar Series, June 2023 (invited by S. Barber).
- Fusion group meeting, Jena University, June 2023 (invited by B. Konig-Ries).
- BBOP group meeting, UC Berkeley, April 2023 (invited by Chris Mungall).
- Musen's lab meeting, Stanford University, March 2023 (invited by M. Musen).
- CGIAR Ontologies Community of Practice Webinar, Oct. 2022 (invited by E. Arnaud).
- 4th Educational Series on Applied Ontology (ESAO) seminar, Oct. 2022 (invited by C. Trojhan).
- 12th Int. Workshop on Formal Ontologies meet Industry (FOMI22), Sept. 2022 (invited by Y. LeFranc).
- BioPortal group meeting, Stanford, April 2022 (invited by J. Graybeal).
- H2020 OntoCommons *Workshop on Addressing challenges of the Industry 5.0*, Nov. 2021 (invited by J. Breslin).
- INRAE Inter-CATI meeting "Semantic Linked Data", Sète, Oct. 2021 (invited by P. Neveu and P. Buche).
- H2020 FAIRsFAIR *Common Minimum Metadata for Semantic Artefact*, June 2021 (invited by Y. Le Franc).
- H2020 OntoCommons *Workshop on Tools for Ontology Engineering*, March 2021 (invited by M. d'Aquin).
- Occitanie Data seminar, Jan. 2021 (invited by E. Clement).
- MISTEA research seminar, Montpellier, Dec. 2020 (invited by P. Neveu).
- Int. FAIR Convergence Symposium session "*FAIR Digital Objects for Cross-domain Data Searching & Linking and Semantic Interoperability*", Dec. 2020 (invited by P. Mutschke).
- MADICS AGEE (AGriculture, Environment, Ecology) workshop, July 2020 (invited by S. Bimonte).
- Agronomy & AI thematic day, French conference on AI, July 2020 (invited by. T. Guyet and D. Rousseau).
- RDA Agricultural Data Interest Group (IGAD) meeting, May 2020 (invited by I. Subirats)
- OntoPortal Alliance kick-off meeting, May 2020 (invited by J. Graybeal).
- H2020 FAIRsFAIR *Minimum Metadata for semantic artefacts workshop*, April 2020 (invited by Y. Le Franc).

- AquaDiva BioGeo-Colloquium, Jena University, Nov. 2019 (invited by B. Konig-Ries).
- Keynote at Int. Symp. on Integrative Bioinformatics, Paris, Sept 2019 (invited by C. Pommier).
- Talk at MSCA monitoring meeting on e-health and biomedical technologies, Brussels, June 2019.
- Invited talk at Meteo France thematic day on data authorities, Toulouse, April 2019 (invited by P. Dayre).
- LIRMM scientific day, Montpellier, Dec. 2018 (invited by P. Poignet).
- RDA France 1st National Day, JNSO 2018, Paris, Dec. 2019 (invited by F. Genova).
- INRIA's Wimmics seminar, Inria Sophia-Antipolis, Nov.2018 (invited by F. Gandon).
- PhenoHarmonIS workshop, Montpellier, May 2018 (invited by E. Arnaud).
- RDA 11th Plenary, IGAD pre-meeting, Berlin, March 2018 (invited by I. Subirats).
- H2020 EUDAT Conference Semantic Working Group, Porto, Jan. 2018 (invited by Y. Le Franc).
- Keynote INIST 'Ingénierie des Connaissances' Series, Nancy, Dec. 2017 (invited by C. Francois).
- IC-Foods Conference, UC Davis, Nov. 2018 and 2017 (invited by M. Lange).
- Keynote at SIMBig 2017, Lima, Sept. 2017 (invited by J-A. Lossio).
- GDR SemanDiv, Montpellier, July 2017 (invited by E. Garnier).
- French Minister – DSSIS (serveurs multi-terminologiques), Paris, June 2017 (invited by B. Séroussi).
- BMIR Research in progress colloquium, Stanford Univ., May 2016 (invited by M. Musen).
- Protégé group meeting, Stanford Univ., April 2016 (invited by T. Tudorache).
- Dumontier's lab group meeting, Stanford Univ., Jan. & Nov. 2016 (invited by M. Dumontier).
- Keynote at the French RISE 2015 workshop, Rennes, June 2015 (invited by C. Roussey).
- Protégé group meeting, Stanford, April 2015 (invited by T. Tudorache).
- Keynote at Forum TIC's, Mons, April 2015 (invited by B. Champagne).
- LGI2P science & society seminar, Nimes, March 2015 (invited by S. Harispe).
- CENTAL team at UC Louvain, Dec. 2014 (invited by C. Fairon).
- Réseau IN-OVIVE, INRA, Montpellier, Oct. 2014 (invited by P. Neveu).
- IBC Scientific day, Montpellier, May 2014 (invited by O. Gascuel).
- SPIM team seminar at INSERM Paris, June 2011 (invited by M-C. Jaulent).
- LIM team seminar at Rennes Univ., April 2011 (invited by O. Dameron).
- CISMeF team seminar at Rouen School of Medicine, March 2011 (invited by S. J. Darmoni).
- Research seminar on ICT & Health, LIRMM, Montpellier, February 2011.
- EXMO team seminar at INRIA Grenoble, March 2010 (invited by J. Euzenat).
- Smile team seminar at LIRMM, Univ. Montpellier, Feb. 2009 (invited by S. A. Cerri).
- EDELWEISS team seminar at INRIA Sophia-Antipolis, Jan. 2009 (invited by F. Gandon).
- Talk at the NCBO developer conference, Stanford Univ., USA, Dec. 2007.
- Intelligent Interactive Distributed Syst. group, Vrije Univ., Amsterdam (invited by F. Brazier). May 2007.
- LIRMM's Informatics department day, UM2, France. July 2005.
- Protégé group meeting, Stanford Univ., CA, USA (invited by M. Crubezy). June 2005.
- E-LeGI WP6 (Work Package 6) seminar, LIRMM, UM2, France. June 2004.
- Computer Science PhD students seminar, LIRMM, UM2, France. January 2004.
- Talk within the GT MFI (Modèles Formels de l'Interaction) working group, LIP6, Univ. Paris 6, Dec. 2003.
- Social Informatics seminar, LIRMM, Univ. Montpellier (invited by S. Cerri). June 2003.

SUMMARY OF TEACHING ACTIVITIES

- **9 years of various academic teaching** (~1400h ~TD) to different kind of students of mixed levels. Described in specific section.
- Teacher at Polytech Montpellier Engineering School. My teaching activities were paused from 2015 to 2020 during my mobility and the return phase of my H2020 MSCA project at Inria.
- 2012-2015: Polytech Montpellier iPad for students project. I run a working group of 70 teachers interested in pedagogical innovation using ICT and iPad, in and out of the classroom.
- Preparation of lectures/tutorials/technical work, evaluation tasks (exam, corrections, jury), projects and internships management, administrative responsibilities. Some classes in English from 2010 to 2012.
- Around 20 days of miscellaneous teacher training followed (pedagogy, numeric, reverse teaching, etc.)

- 2012: One full series of 8 lectures given to Polytech students available on video on iTunesU: Internet Application and Interoperability (AIOP).
- *Lectures:* Structure and Interpretation of Computer Programs, introduction to algorithmic and programming with Scheme/Mapple, French Informatics and Internet Certificate (Open/MS Office, e-learning platforms, etc.), Internet languages (HTML, Java/Javascript, PHP, etc.), Computer Architecture (representation, CPU/Memory, MIPS language), Algorithmic & Programming (ADA, basic algorithmics, data structures), Internet Application and Interoperability (Web application architectures, Web technologies, XML, Web services, J2EE, .NET), Semantic Web (Ontologies 101, technologies & languages, applications).
- *Internship supervision:* technical BSc. (mathematics & computer science), MSc students in computer science.

TECHNICAL SKILLS

- Programming languages: functional/applicative (Lisp, Scheme) or object-oriented (Java) or imperative (Ada, Maple). Some knowledge of MIPS assembler.
- Java & JEE framework technologies (JDBC, Spring, Eclipse).
- Service Oriented Architectures and Web applications. Web services in SOAP/WSDL (Axis) & REST.
- Biomedical terminologies and ontologies (SNOMEDCT, MeSH, UMLS, OBO, etc.) as well as Semantic Web technologies (RDF/OWL/SKOS/SPARQL).
- Database systems (SQL), MySQL/JDBC and information system modeling language (UML, BPMN).
- Web languages & technologies (XML, HTML, Javascript, CSS, PHP/MySQL, JSON).
- Distant learning / e-learning platforms e.g., WebCT, Claroline, Moodle.
- MadKit multi-agent platform (developed within the SMILE team at LIRMM).

PERSONNAL TOPICS

- Experiences in several associations (student, sportive, social). Summer jobs from 1996 to 2002 in agriculture and wineries.
- Music, travelling (several trips in Europe, America, South America and Asia.), reading (novel and press).
- Rock climbing (indoor/outdoor) and other outdoor sports (mountaineering, ice-climbing, hiking, etc.).

LANGUAGES

- French: first language.
- English: very good (school & working knowledge), lived 6 years in the USA.
- Spanish: a few skills (from school).
- Strong international orientation of work (publications & thesis/HDR manuscripts written in English, international PhD/HDR defense jurys, international postdoc).

REFEREES

- Dr. Pascal Neveu, INRAE – MISTEA – pascal.neveu@inrae.fr
- Pr. Anne Laurent, University of Montpellier – LIRMM – laurent@lirmm.fr
- Dr. Fabien Gandon, Inria Sophia-Antipolis – Wimmics – fabien.gandon@inria.fr
- Pr. Stefano A. Cerri, University of Montpellier – LIRMM – cerri@lirmm.fr
- Pr. Mark A. Musen, Stanford University – BMIR – musen@stanford.edu
- Pr. Nigam H. Shah, Stanford University – BMIR – nigam@stanford.edu

DETAILED RESEARCH ACTIVITY

FOCUS ON HDR (HABILITATION) SYNTHESIS (2019)

DEFENSE AND JURY

Title: **Ontology repository and Ontology-based Services – Challenges, contributions and applications to biomedicine & agronomy**

Discipline: Informatics, I2S doctoral school, University of Montpellier

Manuscript: https://tel.archives-ouvertes.fr/tel-02133335

Defense: May 28th 2019

Jury:				
	Michel Dumontier	(professor),	Maastricht University	(reviewer)
	Nathalie Aussenac-Gilles	(DR CNRS),	CNRS, Toulouse	(reviewer)
	Mathieu D'Aquin	(professor),	Nat. Univ. of Ireland, Galway	(reviewer)
	Fabien Gandon	(DR INRIA),	INRIA Sophia Antipolis	(examiner)
	Juliette Dibie-Barthélemy	(professor),	AgroParisTech, Paris	(examiner)
	Pascal Poncelet	(professor),	University of Montpellier	(examiner)
	Mark A. Musen	(professor),	Stanford University	(invited)
	Stefano A. Cerri	(prof. emeritus),	University of Montpellier	(invited)

ABSTRACT

With the explosion of the number of ontologies and vocabularies available in the semantic web, ontology libraries and repositories are mandatory to find and use them. Their functionalities span from simple ontology listing with metadata description to rich platforms offering various advanced ontology-based services: browse, search, visualization, metrics, annotation, recommendation, data access, etc. Studying ontology repositories opens then a wide spectrum of informatics research questions in areas such as knowledge representation, semantic web, data integration, natural language processing, ontology alignment and more. Ontology repositories are usually developed to address certain needs and communities. BioPortal, the ontology repository built by the US National Center for Biomedical Ontologies is the most important resource in biomedicine. It relies on a domain independent open technology that we have contributed to build (at Stanford) and extensively reused and extended for our research (at University of Montpellier) and applications to biomedicine and agronomy.

In this manuscript, we present and discuss six high level challenges for ontology repositories and services: (i) standardize and extend metadata used to describe ontologies and use these metadata to facilitate ontology evaluation, identification and selection; (ii) multilingualism, which requires rethinking ontology repositories to embrace (and encourage) the multilingual semantic web; (iii) all issues related to ontology alignment, not just the automatic generation of mappings, but also their extraction, storage, validation, etc., (iv) the design of better and new generic ontology-based methods especially for processing free text data, (v) the use of ontologies for semantic annotations & linked data; and finally, (vi) scalability & interoperability of the different semantic resources management platforms. For each challenge, we describe and point to results obtained in the context of our ontology repository projects over the last 12-years, especially the NCBO, SIFR, PractiKPharma and AgroPortal projects. We believe our results illustrate potential solutions to move forward in this domain of research.

RESEARCH PROJECTS (2003-2023)

FAIR-IMPACT

FAIR-IMPACT is a Horizon Europe funded CSA project which focuses on expanding FAIR solutions across the EOSC. It builds on the results of FAIRsFAIR and other relevant projects and initiatives. FAIR-IMPACT will identify proven domain solutions and facilitate the interoperable uptake of these solutions across scientific domains and for different types of research output. This includes the overall FAIRification of various research objects from assigning and managing identifiers, describing them with shared and common semantics to making them interoperable and reusable, as well as the challenge of projecting the FAIR principles to other types of research objects such as software. Scientific communities are included in the consortium as integrated use case

partners. This will ensure that viable and tested solutions from one domain can be piloted in others and help to achieve wider uptake, adoption, implementation of, and compliance with the FAIR principles. As the project unfolds, additional support mechanisms (cascading grants, in-kind support) will be introduced. The FAIR-IMPACT ambition is to build a web of FAIR data and related services together with the scientific community and relevant stakeholder groups, and to take steps towards realising the ambition of a web of Open Science. With its focus on increasing FAIRness, FAIR-IMPACT contribute to improving public trust and reproducibility in science.

As work-package leader, I am supervising the different tasks related to ontologies and metadata in the project.

INFORMATION SYSTEM TO EXPLORE THE AGRONOMIC AND OENOLOGICAL POTENTIAL OF VINE GENOTYPES (VITISEXPLORER)

Trials for the evaluation of genotypes resulting from programs for the creation of disease-resistant varieties will generate large volumes of data in the years to come. The objective of the proposed project is 1) to propose computer architectures and exchange formats that allow a coherent structuring of these data in order to allow exchanges and comparisons, 2) to develop user-friendly tools for graphical exploration of these data as well as than statistical analyzes 3) to acquire tools for fine characterization of the responses of genotypes to the environment in order to anticipate their behavior in conditions other than those in which they were evaluated. The VitisExplorer project, supported by the French PNDV program, gather INRAE Colmar, INRAE Montpellier and the French Wine and Vine Institute (IFV).

As a partner in the project, I am bringing in expertise on the use of ontologies in building information systems based on the OpenSILEX suite.

DATA-CENTRIC AI-DRIVEN DATA LINKING (DACE-DL)

In a world of open science and FAIR data, Linked Data has been gaining popularity, due to the means they offer for (meta)data exchange, federation and sharing on the Web. Data linking is the scientific challenge of automatically establishing typed links between the entities of two or more structured datasets. A variety of complex data linking systems exists, evaluated on public benchmarks. While they have allowed for the generation of vast amounts of linked data in the context of various dedicated projects, data generic systems often have limited applicability in many real-world scenarios, where data are highly heterogeneous and domain-specific. DACE-DL targets a paradigm shift in the data linking field with a data-centric bottom-up methodology relying on machine learning and representation learning models. Based on current and previous linked data projects (in music, encyclopedia, agronomy, biodiversity), we will study what a hybrid AI approach can learn from already available and diverse linked data and modularized existing data linking systems in order to re-inject this knowledge into current Web-data challenges, for example in the context of the COVID-19 crisis or in the agronomy domain.

As a partner in the project, I am involved in MISTEA activities on classifying linking problem types with the postdoc of R. Salazar.

ONTOPORTAL ALLIANCE (FRENCH SECTION)

The OntoPortal Alliance, partially supported by the IRT-NUMEV eponym project, brings together three partners: LIRMM/MISTEA in Montpellier, BMIR at Stanford University and LifeWatch ERIC in Italy, who are all working together **to jointly develop methods and a technology, OntoPortal, for the management of ontologies and ontology-based services**. This work is deployed in multiple ontology repositories in different scientific domains, respectively by partner: agronomy (AgroPortal), biomedicine (BioPortal) and ecology/biodiversity (EcoPortal).

As the PI of the IRT-NUMEV supported part of the Alliance my job is to coordinate the French adoptions of the OntoPortal technology and encourage newcomers. I am also pushing for the adoption of this technology in the context of the European Open Science Cloud.

FRENCH SECTION GO FAIR FOOD SYSTEMS IMPLEMENTATION NETWORK (FOOSIN)

The objectives of the FooSIN project are to establish and work within the recently proposed and endorsed GO FAIR Food Systems Implementation Network (IN) to 1) **accelerate the implementation of FAIR principles in the agri-food community**, and 2) position France as a leader in this evolution and make French actions and productions more visible at an international level. The Food Systems IN, co-led by INRAE and Wageningen University and Research, gathers 22 major actors of the agriculture and nutrition domains

worldwide, who commit to FAIR principles and collectively work for their wider and quicker adoption. As members of the Food Systems IN, we propose concrete actions towards the French community of people involved in data production and management for agriculture and food. We will organize a Bring-Your-Own-Data workshops (a.k.a datathons), seek for adapted training materials, and recommend tools and methodologies to FAIRify data and semantic resources, with the aim to leverage the FAIR awareness and skills, and the adoption of efficient tooling by our community. We will also **propose original tools and services for data FAIRification** to be adopted and disseminated by the Food Systems IN at the international level. These services and tools may also be transferred to other fields among the INs of the GO FAIR network.

As a co-principal investigator, I am leading FooSIN's WP2 on GO BUILD to establish tools and methodologies related to the use of semantics for food systems.

DATA TO KNOWLEDGE IN AGRONOMY AND BIODIVERSITY (D2KAB)

D2KAB's primary objective is to **create a framework to turn agronomy and biodiversity data into knowledge –semantically described, interoperable, actionable, open–** and investigate scientific methods and tools to exploit this knowledge for applications in science & agriculture. Agronomy/agriculture and biodiversity (ag & biodiv) face several major societal, economical, and environmental challenges, a semantic data science approach will help to address. We shall provide the means **–ontologies and linked open data– for ag & biodiv** to embrace the semantic Web to produce and exploit FAIR data. To do so, we will develop new original methods and algorithms in the following areas: data integration, text mining, semantic annotation, ontology alignment and linked data exploitation. D2KAB project, supported by French ANR, brings together a unique multidisciplinary consortium of 12 partners to achieve this objective: 2 informatics research units (LIRMM, I3S); 6 INRAE/IRSTEA/IRD applied informatics research units (URGI, MaIAGE, IATE, DIST, TSCF, DIADE) specialized in agronomy or agriculture; 2 labs in biodiversity and ecosystem research (CEFE, URFM); 1 association of agriculture stakeholders (ACTA); and 1 partnership with Stanford BMIR department. Each of the project **driving scenarios (food packaging, agro-agri linked data, wheat phenotype, ecosystems & plant biogeography)** will have a significant impact and produce concrete outcomes for ag & biodiv scientific communities and socio-economic actors in agriculture.

As PI, my contributions are to coordinate the project and monitor the results of each tasks. I am leading the coordination and dissemination work-packages as well as WP2 on ontology-based services.

VISA FOR TEXT MINING (VISATM)

Developing and offering *Text and Data Mining* (TDM) services for scientists raises several legal, organizational and scientific questions. The VisaTM project of the French BSN (*Bibliothèque Scientifique Numérique* – recently renamed *Comité pour la Science Ouverte*) brought together three complementary research organizations **to profile an infrastructure for TDM services in France**: INRA, member of the H2020 text and data mining eInfrastructure project OpenMinTeD (http://openminted.eu), CNRS-INIST, host of the ISTEX (www.istex.fr) platform and University of Montpellier (LIRMM) as leader of the AgroPortal project (http://agroportal.lirmm.fr). The project, divided into 3 work-packages (study, conception, scenarios), allowed the development of mechanisms to provide data resources (text corpora) and semantic resources (ontologies/terminologies) to the OpenMinTed infrastructure. ISTEX (scientific publications databases) and AgroPortal (agronomy related ontologies) were used as demonstrators.

My contributions, within the "Conception" work-package, were to enable the automatic consumption of terminologies and ontologies (from different ontology repositories) within the OpenMinTed platform.

AGROPORTAL

Many vocabularies and ontologies are produced to represent and annotate agronomic data. However, those ontologies are spread out, in different formats, of different size, with different structures and from overlapping domains. Therefore, there is need for a common platform to receive and host them, align them, and enabling their use in agro-informatics applications. By reusing the National Center for Biomedical Ontologies (NCBO) BioPortal technology, **we have designed AgroPortal, an ontology repository for agronomy and related domains**. We offer a portal that features ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperation with the semantic web. We plan to turn that prototype into a real service to the community (http://agroportal.lirmm.fr). We first focused on five driving agronomic use cases that participated in the design and orientation of the project to anchor it in the community: RDA Wheat Data Interoperability WG,

Crop Ontology project, INRAE vocabularies, AgroLD and Agrisemantics Map of Agri-food data standards. **By specifically addressing the requirements of the agronomy community, AgroPortal has kindled an important interest both at the national and international levels**. The platform currently hosts 124 vocabularies with more than 2/3 of them not present in any similar ontology repository and 10 private ontologies. We have identified 90 other candidate ontologies that will be loaded in the future to complement this valuable resource. The project was originally supported by IBC & Labex NUMEV & Agro. It will now be supported by D2KAB project.

As coordinator, I have been the principal architect of the project and the supervisor of 2/3 persons (postdoc and engineer) involved in the development, maintenance, outreach and curation of the platform.

PRACTICE-BASED EVIDENCES FOR ACTIONING KNOWLEDGE IN PHARMACOGENOMICS (PRACTIKPHARMA)

Pharmacogenomics (PGx) studies how individual gene variations cause variability in drug responses. Knowledge in PGx is typically composed of units that have the form of ternary relationships *gene variant–drug–adverse event* –stating that an adverse event may occur for patients having the gene variant when being exposed to the drug– and can be formalized to different extents using biomedical ontologies. Most of the state-of-the-art knowledge in PGx is not yet validated, consequently not yet applicable to medicine. During the PractiKPharma project our objective was to **validate or moderate pharmacogenomics state-of-the-art knowledge on the basis of practice-based evidences**, i.e., knowledge extracted from Electronic Health Records (EHRs). To achieve our goal, we extracted state-of-the-art knowledge from PGx databases (PharmGKB) and literature (PubMed), and we extracted observational knowledge from clinical data; then we compared knowledge units extracted from these two origins, to confirm or moderate state-of-the-art knowledge, with the goal of enabling personalized medicine. PractiKPharma project, supported by French ANR, and head by A. Coulet, brought together two informatics labs: LORIA (Nancy) & LIRMM (Montpellier); and two hospitals: HEGP (Paris) and CHU St Etienne. At LIRMM, we had enhanced the SIFR annotation workflow to capture clinical narrative and semantically annotate French electronic health records.

My contributions were to drive and supervise LIRMM activities (3 persons) and participate into the research for PGx knowledge modelling and comparison. Our team main mission was to enhance the SIFR annotation workflow to capture clinical narrative and semantically annotate French electronic health records.

SEMANTIC INDEXING OF FRENCH BIOMEDICAL DATA RESOURCES (SIFR)

Biomedical data integration and semantic interoperability is necessary to enable **new scientific discoveries that could be made by merging different available data (i.e., translational research)**. A key aspect in addressing semantic interoperability for life sciences is the use of terminologies and ontologies as a common denominator to structure biomedical data and make them interoperable. The SIFR project, mainly funded by French ANR Young Researcher and H2020 MSCA programs, **proposed to investigate the scientific and technical challenges in building ontology-based services to leverage biomedical ontologies and terminologies in indexing, mining and retrieval of French biomedical data.** SIFR built an ontology-based indexing workflow (i.e., French Annotator) similar to what exists for English resources but dedicated and specialized for French. We designed the SIFR Annotator (http://bioportal.lirmm.fr/annotator) a web service for semantic annotation of French textual medical data. SIFR brought together several young researchers at LIRMM to achieve this objective: **Dr. Clement Jonquet**, accompanied by two young assistant professors, Dr. Sandra Bringay (text/data mining) and Dr. Mathieu Roche (NLP). Plus: (i)°**Stanford BMIR**, a worldwide leader providing (English-)ontology-based services to assist health professionals and researchers in the use of ontologies to design biomedical knowledge-based systems; (ii)°**CISMeF group**, which is the national leader to provide French health terminology-based services.

As PI, my contributions were to coordinate the project and monitor the results of each tasks (two PhDs, 1 engineer, multiple interns).

INSTITUT DE BIOLOGIE COMPUTATIONNELLE (IBC)

This project, supported by *Investissement d'Avenir* French ANR program, aimed to develop innovative methods and software to analyze, integrate and contextualize **large-scale biological data in the fields of health, agronomy and environment**. Several branches of research are combined: algorithmics (combinatorial, numerical, highly parallel, stochastic), modeling (discrete, qualitative, quantitative, probabilistic), and data management and information retrieval (integration, workflows, cloud). **IBC's Axe 5**, headed by P. valduriez

(INRIA) and P. Larmande (IRD), was interested in several topics related to scientific workflow (provenance, big data) as well as data integration (ontology-based approaches). In this work-package, we have kicked-off the AgroPortal (cf. above) and AgroLD platforms. The **Agronomic Linked Data knowledge base (AgroLD)** mainly developed by P. Larmande (IRD), is a knowledge system that exploits Semantic Web technology and relevant standard domain ontologies, to integrate –genomics, proteomics and phenomics– information on plant species widely studied by the agronomic research community. AgroLD is a RDF knowledge base of 100M triples created by annotating and integrating more than 50 datasets coming from 10 data sources with 10 ontologies. My contributions within IBC were the leadership on AgroPortal project and expertise in using ontologies for annotations in the AgroLD project.

CENTRE DE RECHERCHE ET D'INNOVATION INDUSTRIELLE (CR2I) DIAGNOSTIC-SANTE PROJECT

The CR2I was an *Investissement d'Avenir* French ANR program for industrial biomedical research. As member of the metadata repository group (multi-omics platform development), we were interested in offering a multi-omics data repository and defining standard vocabularies to represent such data. Headed originally by Sanofi and Dr. Magali Roux, the project led to the Kyomed spinoff (www.kyomed.com). My contribution within the CR2I was knowledge engineering and modeling expertise.

NATIONAL CENTER FOR BIOMEDICAL ONTOLOGY (NCBO)

NCBO (part of NIH National Centers for Biomedical Computing Roadmap) is a consortium of leading biologists, clinicians, informaticians, and ontologists who develop innovative technology and services that allow scientists to create, disseminate, and manage biomedical information and knowledge in machine-processable form. The project vision is that all biomedical knowledge and data are disseminated on the Internet using principled ontologies, such that the knowledge and data are semantically interoperable and useful for furthering biomedical science and clinical care. Important members of NCBO consortium are Stanford University, Mayo Clinic, and University of Victoria. NCBO develops the BioPortal (http://bioportal.bioontology.org) platform. My contributions within NCBO are detailed hereafter.

EUROPEAN LEARNING GRID INFRASTRUCTURE (ELEGI)

The goal of the ELeGI project (www.elegi.org, IST Integrated Project EU – FP6) was to promote a shift from the traditional e-learning approach (content-centred) to an interaction based, collaborative and experimental one. This new paradigm focused on knowledge construction using experimental based and collaborative learning approaches in a contextualized, personalized and ubiquitous way to replace the current information transfer paradigm focused on content and on the key authoritative figure of the teacher who provides information. The project aimed to propose a grid service-oriented architecture to support this paradigm shift. Important members of ELeGI consortium were UM2, Open University, Universities of Southampton, Dundee, Pau, St Andrews, ATOS origin. Within the context of the ELeGI project we worked on a **collaborative environment constructed over a grid infrastructure called the Grid Shared Desktop (GSD)**. The GSD was a Web-accessible environment that provides members of a virtual community with a set of desktops supporting collaboration in both synchronous and asynchronous mode. It is a powerful interface relying on grid service architecture to communicate user representations and build collaborative knowledge. We evaluated the GSD with a community of chemists tackling the problem of **collaborative construction of an ontology** (using the ontology editor Protégé within the GSD). This work was done in collaboration with Dr. M. Crubezy (Stanford Medical Informatics, USA), Dr. C Laurenco (Institut Charles Gerhardt de Montpellier, France) and Pr. A. Krief (Laboratoire de Chimie Organique Synthèse, Faculté N.-D de la Paix, Belgium).

LEARNING GRID OF EXCELLENCE WORKING GROUP (LEGE-WG)

The project (IST STREP Project EU – FP6) aimed to facilitate the establishment of a "European Learning Grid Infrastructure" by supporting the systematic exchange of information and by creating opportunities for close collaboration between the different actors in the formative process. The project gave birth to the ELeGI project. My contribution within LeGE-WG took the form of collaboration with Pr. Marc Eisenstadt (Knowledge Media Institute, Open University, UK) and his group to propose a common vision based on learning agents (artificial) and enhanced presence (human) for dynamic services.

POSTDOCTORAL RESEARCH ACTIVITY (2007-2010)

As postdoctoral fellow at the **Stanford Center for Biomedical Informatics Research (BMIR)**, I was a member of Pr. M. Musen's group. BMIR concentrates on the study of components for building knowledge-based systems, controlled terminologies and ontologies, and technology for the Semantic Web. For 30 years, this laboratory proposed contributions to assist tasks in biomedicine. BMIR still develops Protégé the most used ontology editor today. Within the National Center for Biomedical Ontology (NCBO) project, **we developed BioPortal consider today as the reference and most comprehensive Web repository for biomedical ontologies and terminologies.** This library contains a large collection of ontologies in biomedicine in different format (OBO, OWL etc.) such as Gene Ontology, NCI Thesaurus, ICD, FMA. Users can browse, search, and comment ontologies both online and via a Web services API. The goal of NCBO was to provide the biomedical community with a set of ontology-based services that can be used by scientists to integrate their data and enhance translational discoveries (biomedical data integration problem). In that context, I led conjunctly with Dr. Nigam H. Shah (PhD, MD) the semantic annotation of biomedical data activities of the center. NCBO encourage biomedical researchers to annotate their data with biomedical ontology concepts for better data integration, search and discoveries. As main activity, **I designed, implemented and experimented an ontology-based annotation workflow to annotate text data with ontology concepts.** The workflow is based on syntactic concept recognition (using concept names and synonyms) and on a set of semantic expansion algorithms that leverage the semantics in ontologies (e.g., is_a relations, mappings, semantic distance) to create new annotations. The annotation workflow relies on BioPortal biomedical ontologies and generates annotations in several formats like XML and RDF/OWL. **We provide the workflow as a web service: the NCBO Annotator** (http://bioportal.bioontology.org/annotator) which is one of the most used service of the platform today. Internally, we have used the annotation workflow to index biomedical data resources with ontology concepts. The **NCBO Resource Index** (http://bioportal.bioontology.org/resources) allows a user to search for biomedical data based on ontology concepts. The resource index is directly searchable in the BioPortal ontology repository: when a user browses a given concept, he has access (link) to the list of resource elements that have been annotated with this concept. We have processed the textual metadata of elements from 20+ biomedical resources (e.g., abstract of articles (PubMed), gene expression data sets (Array Express), clinical-trial reports (ClinicalTrials.gov)) and new ones are still incorporated. We also use the annotation workflow to implement the **NCBO Ontology Recommender service** (http://bioportal.bioontology.org/recommender) which informs the user of the most appropriate ontologies relevant for their given dataset using semantic annotations. This service has been evaluated very useful by the community.

Developing the annotation workflow allows me to be interested in several aspects related to ontologies and semantic web: (i) development and reuse of semantic distances (graph/path based, or information content based), (ii) development and management of ontology mappings, (iii) graph algorithms (e.g., traverse, paths between concepts) to deal with the is_a hierarchy structure, (iv) ontology and concept URIs to deal with ontology versioning and annotations maintenance.

SOFTWARE DEVELOPMENT

Within NCBO, I was involved in both research and development activities. Being involved in all the stages of a development project from research to prototype and to production is a very good learning experience of software engineer practices (project management, code sharing, developer meetings, technical questions, budget). Furthermore, the NCBO project was driven by several "driving biological projects". Being driven by those projects was very interesting in terms of research, design and software development. It provided direct feedback and evaluation that are instantly re-injected in the design loop.

PHD THESIS RESEARCH ACTIVITY (2003-2006)

SUBJECT

My thesis project was about **dynamic service exchange modelling**. In a computing world where services become more and more important, the project tackled the hard question: how services can be dynamically and interactively constructed and exchanged in order to accurately identify and fit the user problem. The notion of service is now at the centre of distributed system development; it plays a key role in their implementation and success. New needs in service exchange scenarios are clearly highlighted (dynamicity, composition, conversation based, user-centred behaviour, customization, business processes, semantics, etc.) by the service-oriented computing community and are not addressed by current service oriented architectures (e.g., web services). The next generation of services will consist of dynamically generated services, i.e., **services**

constructed on the fly by the service provider according to the conversation it has with the service user. In the thesis, I led a deep reflection about the notion of service. I explain that providing a service means to identify and offer a solution (among many possible ones) to the problem of another. A service is not just a pre-determined product. I introduce the concept of ***dynamic service generation*** as a different way to provide and use services in a computer-mediated context: services are dynamically constructed, provided and used by agents (human or artificial) within a community, by means of a conversation. In dynamic service generation, the user agent is not assumed to know exactly what the provider agent can offer him. He has to find out and construct step by step what he wants based on the service provider's reactions. The central idea is that a service is based on a conversation. Actually, dynamic service generation highlights the idea of processing something new instead of merely delivering something that already exists such as in the product approach. In everyday life, when somebody needs new clothes, buying *ready-to-wear clothes* is analogous to asking for a product, whereas *having clothes made by a tailor* is analogous to requiring a service to be generated.

METHODS

To address that big challenge we were interested in grid and multi-agent systems. Grid because this is the first distributed architecture (and infrastructure) really developed in a service-oriented perspective: grid services are compliant web services, based on the dynamic allocation of virtualized resources to an instantiated service. Grid services augment the basic notion of web service with two significant features: service state and service lifetime management. Whereas web services have instances that are stateless and persistent, grid service instances can be either stateful or stateless, and can be either transient or persistent. On the other hand, agents are said to be autonomous, intelligent and interactive entities that may use and provide services (in the sense of particular problem-solving capabilities). Actually, agents have many interesting characteristics for service exchange: they are reactive, efficient, adaptive, they know about themselves, they have a memory and a persistent state, they are able to have conversation, work collaboratively, negotiate, learn and reason to evolve, deal with semantics associated to concepts by processing ontologies, etc. As they are based on a conversation, a key indentified aspect to dynamically generate services was the ability for services to have a state (grid) and then being able to intelligently and dynamically modify this state (agent).

CONTRIBUTIONS

I made three precise contributions: (i) **STROBE, a new *agent representation and communication model***. STROBE is inspired by the three Scheme primitives STReam, Object and Environment. STROBE agents are able to interpret communication messages and execute services in a given dynamic conversation context. These contexts are dedicated to a specific interlocutor (or group of interlocutors). These contexts take the form of several environments (with meta-programming techniques) in which agent capabilities and messages are interpreted. Thanks to those environments an agent has a part of its state that evolves according to the interactions it has with another agent. A STROBE agent develops a dedicated language for each of its interlocutors. This feature was exploited in the perspective of dynamic service generation. In the context of service exchange, this feature allows an agent to dynamically specify and execute a service. We illustrated such a scenario with a train ticket booking service agent. Having dedicated and dynamic conversation context is the key new aspect of the STROBE model. (ii) ***i-dialogue,* a computational abstraction that models multi-agents conversations** by means of fundamental constructs of applicative/functional languages (i.e., streams, lazy evaluation and higher-order functions). An *intertwined-dialogue* takes the form of a recursive function, producing and consuming streams of messages, run by each agent in a multi-agents (more than two) conversation. (iii) ***AGIL,* a *service-oriented grid-agent integrated model*** based on the representation of agent capabilities as grid services. Many works demonstrate the use of multi-agent techniques for grid (e.g., agent based resource management) or merging web/grid services standards with agents ones, but none of them propose a concrete integration of the two paradigms. AGIL is a new, concrete and formalized integration of the agent and grid paradigms. In this model, concepts of grid and multi-agent systems, relations between them and the rules are semantically described by a set-theory formalization and a common graphical description language, called ***Agent-Grid Integration Language (AGIL)*** – also formalized as an ontology. AGIL aggregates the thesis results together by formalizing agent interactions for service exchange on the grid. I demonstrate how such integration is a great feature for services. For example, I demonstrate the importance of the concept of state in service exchange (i.e., being able to have a state, being able to dedicate a part of this state to an interlocutor and being able to intelligently and dynamically modify this state). I highlight how stateful and dynamic grid services (by opposition to stateless web services) and agent dedicated conversation context are

two complementary approaches to deal with dynamic generated services. This integration model was also inscribed in the perspective of dynamic service generation.

CONTEXT & DEFENCE JURY

My thesis research project (3 years) was also done at LIRMM supervised by Pr. Stefano A. Cerri. I had a French government MENRT fellowship. I wrote and defended (November 16, 2006) my thesis in English. My defense jury included 3 thesis reviewers and was composed of some of the best international scientists in these areas:

Michael N. Huhns,	Pr.,	University of South Carolina, USA	(rapporteur)
Luc Moreau,	Pr.,	University of Southampton, UK	(rapporteur)
Domenico Talia,	Pr.,	Università della Calabria, Italy	(rapporteur)
Amal El Fallah Seghrouchni	Pr.,	Université Paris 6, France	(examinateur)
Jacques Ferber,	Pr.,	Université Montpellier II, France	(examinateur)
Jean-Luc Koning,	Pr.,	Inst. Nat. Polytechnique de Grenoble, France	(examinateur)
Stefano A. Cerri,	Pr.,	Université Montpellier II, France	(directeur)

SOFTWARE DEVELOPMENT

The development project done in the context of my PhD had a proof-of-concept objective. The STROBE implementation project was done to demonstrate with some experiments some important features of the STROBE model. The two main experiments illustrate: (i) meta-level learning by communicating, where STROBE agents modify their interpreters while communicating and learn a new communicative acts by; ii) dynamic specification where STROBE agents specify by interactions a function that must be executed to accomplish a service (using non deterministic interpretation & constraints). I suggested in this project to embed in an agent architecture a "reflexive tower" such as the one available in functional/applicative languages (e.g., Scheme/LISP). Using reflective programming techniques to dynamically change the way an expression is evaluated is not an easy task. Doing it for agent architecture was new. A first partial implementation was done in Scheme (to implement the core of agent interpreters using reflective programming techniques). A second one, StrobeKit, was done in Scheme/Java within the multi-agents platform MadKit and the Kawa framework to connect Scheme and Java. The StrobeKit API enables a programmer to write agents that respect STROBE model's requirements concerning agent structure and agent interaction. Details on STROBE implementation can be found Appendix C of my PhD thesis.

MSC RESEARCH ACTIVITY (2003 AND BEFORE)

SUBJECT & CONTRIBUTIONS

We address the following problem: how can an agent change dynamically (i.e., at run time) its behaviour based on messages it receives during a conversation. We showed that **using meta-programming techniques (reflexivity/reification) in an agent architecture** an agent can actually dynamically modify the way it interprets messages and then adapt its behaviour. For instance, in applicative/functional programming languages, reflective programming allows an interpreter to be dynamically (i.e., during the evaluation process) changed in order to access and eventually modify the execution context (expression, environment, interpreter, continuation) of a procedure. Embedded into agents, such a feature enables them to dynamically learn at the *data*, *control* and *interpreter* levels enabling them to change the way they interpret messages in a conversation. We illustrate the model with an experiment where an agent (as a Scheme interpreter) learn dynamically a new performative (speech act for a message). This meta-level learning by communicating was envisaged as a great feature to go toward the *dynamic service generation* vision presented hereafter. This work lead to several publications. Also, as MSc. student at UM2, I worked with some fellows on different student "research" projects (usually a couple of months long): (i) Warbot (robot agents) contest with the **multi-agent platform MadKit** (advisor Pr. Jacques Ferber), (ii) coordination in **cellular automata** (advisor Dr. Philippe Reitz).

CONTEXT

My MSc research projects (6 months) was done at **Laboratory of Informatics, Robotics, and Microelectronics of Montpellier (LIRMM),** University Montpellier 2 (UM2), within the Kayou team concerned with topics such as agents and multi-agent systems, constraints, machine learning, web, grid, service-oriented computing, ontologies, collaborative learning. I was supervised by Pr. Stefano A. Cerri. Mainly, this project initiated my PhD research project presented after. However, it allowed me to get interested in some interesting tools for the future such as for example applicative/functional programming languages (e.g., Scheme/Lisp).

(FRENCH) DETAILS DES ACTIVITES D'ENSEIGNEMENT

Mes activités d'enseignement sont en pause de 2015 à 2020 (5 années universitaires) pendant ma mobilité et la phase de retour de mon projet H2020 MSCA à l'Inria.

EXPÉRIENCE

- Depuis 2010 : **Maitre de Conférences à l'École Polytechnique de Montpellier**, composante de l'Université de Montpellier (192h~TD par an). De 2010 à 2015, j'étais responsable de 2 modules en 3ème et 5ème année d'école d'ingénieur et je participais à d'autres enseignements décris ci-après.
- 2010-2015 : Je participai de manière investi et proactive à mon département d'enseignement en m'impliquant sur les activités périphériques du métier d'enseignant : recrutement des étudiants, salons, journées portes-ouvertes, maquettes, réunion pédagogiques, conseil de perfectionnement, etc.
- 2010-2014 : Enseignements des modules de 5ème année IG à Polytech en anglais.
- 2014 : Participation au 2ème Sommet du Numérique en Education, Montréal, Canada pour présenter nos travaux en innovation pédagogique à Polytech.
- 2012 : J'ai produit une série complète de 8 conférences capturées en vidéos données aux étudiants de 5ème année de Polytech **disponibles sur iTunesU**: Cours Application Internet et Interopérabilité (AIOP).
- 2006-2007 : **ATER (complet) à l'Université Montpellier 3.** Mon expérience d'enseignement (192h~TD) dans une université différente (arts, lettres, langues, sciences humaines et sociales) a été très enrichissante. Elle m'a permis d'intégrer une autre équipe d'enseignement et de côtoyer un autre public que celui de l'Université Montpellier 2 (sciences et techniques). J'y exerçais également des responsabilités communes et administratives.
- 2003-2006 : **Moniteur CIES à l'Université Montpellier 2.** Le monitorat fut ma première expérience d'enseignement. En 3 ans (64h~TD/an), elle m'a permis d'exercer à petite échelle beaucoup des tâches de l'enseignant : préparation des cours/TD/TP, participation à l'évaluation (rédaction des sujets, corrections, jury), encadrement de projet et de stage, tâches administratives etc. J'ai aussi suivi un ensemble de formations (expression, théâtre, préparation, projets, etc.) proposées par le Centre d'Initiation à l'Enseignement Supérieur (CIES) de Montpellier.
- **Le descriptif des cours que j'ai effectué est disponible à http://www.lirmm.fr/~jonquet/teaching**

RESPONSABILITÉS

- 2012-2015 : **Responsable de la 5ème (et dernière) année de la filière « Informatique et Gestion »**. Gestion de la maquette (2 options), des emplois du temps, et des intervenants extérieurs (~25 personnes).
- 2012-2015 : **Coordination de la cellule des enseignants de Polytech** (70 personnes) qui s'intéressent à l'innovation pédagogique à l'aide des tablettes numériques (iPad). Nous avons décrit, testé et réalisé plusieurs scénarios d'utilisation des iPads dans la classe. Je m'occupais également d'une partie de la logistique du projet (1000 iPads). Voir : https://hal-lirmm.ccsd.cnrs.fr/lirmm-01118757/document J'ai organisé également des formations chaque année avec un collaborateur d'Apple Éducation.
- 2012-2015 : **Correspondant Polytech pour le comité TICE** (Technologies de l'information et de la communication pour l'éducation) de l'Université Montpellier 2. Nous avons organisé la conférence TICE 2014 à Béziers, France (~100 participants) et j'ai piloté l'organisation d'une session ReX (retour d'expérience) avec D. Cassagne.

FORMATION À LA PÉDAGOGIES SUIVIES

- 2015 (1 jour) : Formation UM ER10 « Gestion du temps et des priorités » par Jean-Yves L'Huillier (Vision Partagée).
- 2015 (1/2 journée) : Formation UM ER02b « Comment organiser un enseignement dans le cadre d'une approche programme (de type Bologne/LMD) ».

- 2015 (1/2 journée) : Conférence et suivi des formés UM ER02 : « Enseigner à l'université aujourd'hui : les grandes tendances de l'enseignement supérieur et leurs impacts sur les programmes d'enseignement » par Denis Berthiaume.
- 2015 (2 jours) : Formation UM LA04 « Les techniques de réunion en anglais » par
- 2014 (1,5 jour) : Formation UM/Polytech « Découverte de l'apprentissage actif» organisé par G. Cathébras.
- **2013, 2014, 2015 (3 jours) : Formation Polytech à l'utilisation de l'iPad pour la pédagogie par Willy Dupont (formateur agrée Apple Éducation).** Ces formations (que je co-organisais) m'ont donné les outils et méthodes pour introduire l'iPad dans mes cours. J'ai ensuite repris entièrement mon cours de 3ème année pour utiliser de manière active avec les édifiants les tablettes pendant le cours grâce à des sondages, des exercices, des vidéos, etc. L'expérience était très enrichissante et le retour valorisant (bien que pas facile à mettre en place).
- **2013 (3 jours) : Formation ER15 « Enrichir ses pratiques en pédagogie universitaire » par Denis Berthiaume.** Cette formation a été une révélation aux techniques du métier d'enseignant. J'ai réellement compris les tenants et aboutissants de la pratique grâce à cette formation (en 2 étapes).
- 2013 (1/2 journée) : Formation ER19 « Utiliser la plateforme pédagogique Moodle » par DSI UM2.
- 2013 (1 jour) : Formation ER35 « Créer des ressources multimédias pour l'enseignement ».
- 2004-2006 (~7 jours) : Bouquet de formations à l'enseignement proposé aux Moniteurs CIES par l'IUFM de Montpellier. Dont une formation de 3 jours sur la voix et l'expression orale.

RÉCAPITULATIF

	Enseignement	Type	Level	Heures (~TD)/an
(2013-2015)	Web Sémantique	CM	Master	6
(en 2011 seulement)	Algorithmique et programmation Ada/C	TD/TP	Licence	40
Maitre de Conférences Polytech Montpellier (2010-2015)	Architecture des Ordinateurs	CM	Licence	18
		TD/TP	Licence	42
	Applications Internet et Interopérabilité	CM	Master	18
		TD/TP	Master	24
	Encadrement stage	-	Master	30
	Encadrement PIFE	-	Master	38
	Divers cours		Master	4
	Divers encadrement	-	Licence	10
ATER Univ. Montpellier 3 (2006-2007)	C2i niveau débutant	CM/TD/TP	Licence	102
	C2i niveau avancé	CM/TD/TP	Licence	60
	Internet/Php/Javascript	CM/TD/TP	Licence	30
Moniteur CIES Univ. Montpellier 2 (2003-2006)	Programmation/Scheme/évaluation	TD	Licence	100
		TP	Licence	40
	Programmation/Algorith-mique/Maple	TD	Licence	24
		TP	Licence	20
	Divers cours	CM	Licence	9
	Encadrement	-	Licence	15
		TOTAL :	**192*7 ans ~ 1400h (~TD)**	

ENSEIGNEMENTS EFFECTUÉS

- 2013-2015 : **Module « Web Sémantique »**

Public : Ecole d'ingénieur « Informatique et Gestion », 5ème année.
Contribution : Cours inspiré de 2 tutoriaux (N. Noy & F. Gandon) et d'un listing d'applications du web sémantique. **Gestion complète du module**.
Objectifs : Le cours a pour objectif une introduction aux principes et technologies du web sémantique.

URL : http://mon.univ-montp2.fr/claroline/course/index.php?cid=P1S904

- 2010-2015 : **Module « Applications Internet et Interopérabilité »**

Public : Ecole d'ingénieur « Informatique et Gestion », 5ème année.
Contribution : Cours effectué en anglais (3 ans). ~300 transparents de cours. **Gestion complète du module** et des interventions extérieures sur J2EE et .NET.
Objectifs : Le cours a pour objectif la compréhension des architectures d'application Web. Une approche historique est suivie pour faire une revue des différents principes et modèles. Les technologies des applications Web et d'interopérabilité sont également présentées e.g., XML, J2EE, .NET, Web services, etc.

Série de cours sur iTunes.

URL : http://mon.univ-montp2.fr/claroline/course/index.php?cid=P1S911

- 2010-2015 : **Module « Architecture des Ordinateurs »**

Public : Ecole d'ingénieur « Informatique et Gestion », 3ème année.
Objectifs : Le cours a pour objectif la compréhension de l'architecture des ordinateurs afin d'acquérir les connaissances de base utiles à la compréhension des autres disciplines de l'informatique. L'accent est notamment mis sur les principes de codage des données et des instructions et sur le fonctionnement de la mémoire et de l'unité centrale de traitement.
Contribution : ~240 transparents de cours et 3 feuilles de TD. **Gestion complète du module**.

URL : http://mon.univ-montp2.fr/claroline/course/index.php?cid=M513

- 2011 : **Module « Algorithmique et programmation »**

Public : Ecole d'ingénieur « Informatique et Gestion », 3ème année.
Contribution : Intervention en TD/TP.
Objectifs : Compréhension des algorithmes comme une description précise et rigoureuse d'une suite d'opérations permettant d'obtenir, en un nombre fini d'étapes, la solution d'un problème. Type abstrait de données. Structure de données. La partie programmation aborde dans un premier temps le langage Ada puis le langage C.

URL : http://mon.univ-montp2.fr/claroline/course/index.php?cid=PIG51P1S511

Responsable : Christophe Fiorio – fiorio@lirmm.fr

- 2003&2004 : **Module « Introduction à la programmation avec Scheme »**

Public : 2ème année Deug MIAS (Mathématique, Informatique et Applications aux Sciences)
Objectifs : Ce module vise à introduire aux étudiants les concepts de base de l'abstraction procédurale, l'abstraction de données et des mécanismes d'évaluation (substitution, environnement, etc.) à l'aide d'un langage de programmation fonctionnel/applicatif, Scheme.
Contribution : Pour ce module, j'ai réalisé conjointement avec un collègue moniteur un ensemble de 8 nouvelles feuilles de TD et 6 nouvelles feuilles de TP ainsi que des encadrements de projets. Je me suis également occupé de **l'organisation générale du module** (équipe, réunions, réservation des salles, etc.).

Responsable : Stefano A. Cerri – cerri@lirmm.fr

- 2005 : **Module « Introduction à l'algorithmique et à la programmation (Mapple) »**

Public : 1ère année Licence (sciences)
Objectifs : Ce module vise à introduire aux étudiants les concepts de base de la programmation (variable, affectation, structure de contrôle, etc.) à l'aide d'un langage algorithmique puis d'un langage de programmation impérative, Maple.

Contribution : Module pour lequel j'ai intégré une équipe d'enseignement importante, ce qui m'a fait découvrir d'autres aspects de l'enseignement. Les feuilles de TD/TP existaient déjà.

Responsable : Philippe Janssen – janssen@lirmm.fr

URL : http://ens.math.univ-montp2.fr/SPIP/ULIN101

- 2006 : **« Certificat Informatique et Internet »** (C2i niveau débutant et avancé))

Public : tous niveaux/toutes filières (lettres & sciences sociales)
Objectifs : Le C2i est un certificat national qui atteste de la compétence et de la maîtrise des technologies de l'information et de la communication. L'enseignement effectué n'est pas de l'Informatique « pure », mais de l'initiation à l'outil Informatique, à la bureautique et à Internet (forum, mails, HTML, etc.). Cela m'a permis de me confronter à des aspects plus pédagogiques que techniques de l'enseignement. Le public ayant très peu d'expérience en informatique.
Contribution : Participation à l'amélioration d'un cours existant. Contributions administratives et techniques.

Responsable : Patrice Séébold – seebold@lirmm.fr

URL : http://www.univ-montp3.fr/miap/ens/info/index.html

- 2007 : **Module « Informatique de l'Internet »**

Public : 2ème année, Licence MASS (Mathématiques Appliquées aux Sciences Sociales)
Objectifs : Module dont l'objectif est d'introduire aux étudiants les langages et les concepts de l'Internet (HTML, Java/Javascript, PHP, etc.).
Contribution : Mise à jour et reprise d'éléments de cours existants.

Responsable : Joël Quinqueton – jq@lirmm.fr

URL : http://www.univ-montp3.fr/miap/ens/MASS/XLIN401/index.htm

INTERVENTIONS DIVERSES & ENCADREMENTS

- 2020-2022 : Intervention dans le DU Scientific Data Management de l'Université de Montpellier.
- 2019 : Intervention dans le module Web Sémantique du Master DECOL de la Faculté des Sciences de l'Université de Montpellier.
- 2010-2015 : J'encadre également des stages de fin d'études (2 par an) et de projets industriels (2 par an). Participation à divers jurys.
- 2010-2012 : Cours en Master TIC et Santé (UM2 et Institut Telecom).
- 2006 : Cours en M2P Informatique de l'UM2 dans le module « Informatique Sociale ».
- 2004 : Cours en DEA Informatique de l'UM2 dans le module « Système Multi-Agents ».