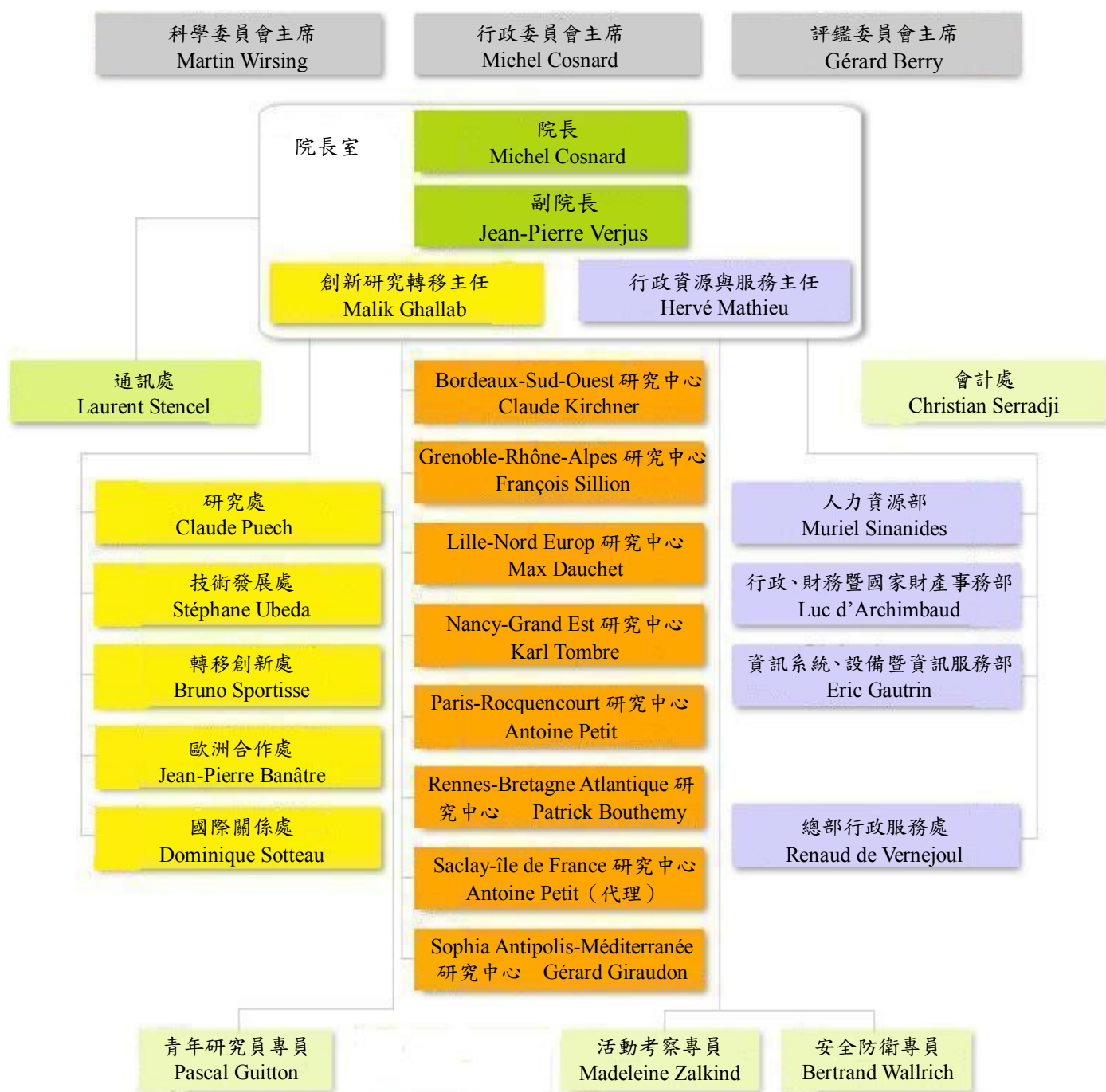


# 法國國家資訊暨自動化研究院 (Institut National de Recherche en Informatique et en Automatique, INRIA)

駐法科技組  
2010.6.17

法國國家資訊暨自動化研究院 (INRIA) 創於 1967 年，為公立科技機構，隸屬研究部和財經工業部，下設 8 個研究中心，共計有員工 4300 名、170 個研究小組，負責資通訊科技(STIC) 領域的基礎與應用研究，負有(1)研究、(2)技術轉移、(3)知識分享與培訓博士生等三項任務。其研究人員來自大學與高等研究機構如國家科學研究中心，透過研究協議與業界保持緊密的關係。2010 年的預算為 2 億 1700 萬歐元，其中 20% 為自有收入。

## 一. 組織



## 二. 2008-2012 年的七項發展策領域

國家資訊暨自動化研究院的發展策略在於緊密結合優質科學與技術轉移，以期在(1)複雜動力系統模型化、模擬與最佳化、(2)資訊系統的安全暨可靠性、(3)無限通訊、資訊與計算、(4)與真實及虛擬世界的交互作用、(5)數位工程、(6)數位科學、(7)數位醫學等領域突破科學與技術的防線。

## 三. INRIA 的國際關係

INRIA 與歐洲地區保持重要的關係，是歐洲資訊暨數學研究協會（ERCIM）成員，該協會匯集歐洲 20 個國家的研究機構。研究院參與 120 項歐盟第六期科研架構的活動與 40 項第七期科研架構的活動，與國際眾多大學、研究機構及研發實驗室合作交流，例如設於北京的中法資訊-自動化暨應用數學聯合實驗室（LIAMA）、聯合研究團隊、培訓與實習計畫等等。

## 國家資訊暨自動化研究院 8 個研究中心

INRIA 下設(1)波爾多-西南地區 (Bordeaux-Sud-Ouest)、(2)南錫-大東部地區 (Nancy-Grand Est)、(3)雷恩-大西洋布列塔尼地區 (Rennes-Bretagne Atlantique)、(4)格勒諾博-隆河-阿爾卑斯地區 (Grenoble-Rhône-Alpes)、(5)巴黎-Rocquencourt、(6)索非亞安提波利-地中海地區 (Sophia Antipolis- Méditerranée)、(7)里耳-北歐 (Lille-Nord Europ)、(8)薩克雷-大巴黎地區 (Saclay-île de France) 等 8 個研究中心。

### 一. 波爾多-西南地區 (Bordeaux-Sud-Ouest) 研究中心

該中心創於 2008 年 1 月 1 日，計有員工 297 名，下設 19 個研究小組，研究領域包括(1)應用數學、計算與模擬；(2)演算、編程、軟體與建構；(3)網絡、系統暨服務、分散式運算；(4)感知、認知與互動；(5)生命暨環境科學的資通訊科技。

網址：[www.inria.fr/bordeaux](http://www.inria.fr/bordeaux)

該研究中心所屬的實驗室依研究主題劃分如下：

#### 1. 應用數學、計算與模擬：

- (1) BACCHUS - Outils parallèles pour les algorithmes numériques et les méthodes de résolutions des problèmes essentiellement hyperboliques
- (2) CONCHA - Complex Flow Simulation Codes based on High-order and Adaptive methods
- (3) MC2 - Modeling, control and computations
- (4) ALEA - Advanced Learning Evolutionary Algorithms
- (5) CQFD - Contrôle de Qualité et Fiabilité Dynamique
- (6) GEOSTAT - Geometry and Statistics in acquisition data
- (7) REALOPT - Reformulations based algorithms for Combinatorial Optimization

#### 2. 演算、編程、軟體與架構

- (1) LFANT - Lithe and fast algorithmic number theory

#### 3. 網絡、系統與服務、分散式運算

- (1) PHOENIX - Programming Language Technology For Communication Services
- (2) CEPAGE - Chercher et Essaimer dans les Plates-formes A Grande Echelle
- (3) HIEPACS - High-End Parallel Algorithms for Challenging Numerical Simulations
- (4) RUNTIME - Efficient runtime systems for parallel architectures

#### 4. 感知、認知與交互作用

- (1) IPARLA - Visualization and manipulation of complex data on wireless mobile devices
- (2) GRAVITE - Graph Visualization and Interactive Exploration
- (3) FLOWERS - FLOWing Epigenetic Robots and Systems
- (4) SIGNES - Linguistic signs, grammar and meaning: computational logic for natural language

#### 5. 生物學、醫學與環境科學計算

- (1) MAGIQUE-3D - Advanced 3D Numerical Modeling in Geophysics
- (2) ANUBIS - Tools of automatic control for scientific computing, Models and Methods in Biomathematics
- (3) MAGNOME - Models and Algorithms for the Genome

## 二. 南錫-大東部地區 (Nancy-Grand Est) 研究中心

該中心創於 1986 年，計有員工 510 名，下設 23 個研究小組，研究領域包括(1)應用數學、計算與模擬；(2)演算、編程、軟體與建構；(3)網絡、系統暨服務、分散式運算；(4)感知、認知與交互作用；(5)生命暨環境科學的資通訊科技。該中心的研究可應用於(1)網路、(2)資訊系統安全、(3)虛擬實境、(4)機器人、(5)生物資訊、(6)健康等領域。

網址：[www.inria.fr/nancy](http://www.inria.fr/nancy)

該研究中心所屬的實驗室依研究主題劃分如下：

### 1. 應用數學、計算與模擬：

- (1) CALVI: Scientific computation and visualization
- (2) CORIDA: Robust control of infinite dimensional systems and applications
- (3) COSTEAM: Optimal and secure management of manufacturing systems
- (4) TOSCA: To simulate and calibrate stochastic models

### 2. 演算、編程、軟體與架構

- (1) CAMUS: Compiling for multicore architectures
- (2) CARAMEL: Cryptology, arithmetic: hardware and software
- (3) CARTE: Theoretical adverse computations, and safety
- (4) CASSIS: Combination of approaches to the security of infinite states systems
- (5) PAREO: Formal islands: foundations and applications
- (6) TRIO: Real time and interoperability
- (7) VEGAS: Effective geometric algorithms for surfaces and visibility
- (8) VERIDIS: Deductive verification tools for concurrent and distributed systems

### 3. 網絡、系統與服務、分散式運算

- (1) ALGORILLE: Algorithms for the grid
- (2) MADYNES: Management of dynamic networks and services
- (3) SCORE: Services and cooperation

### 4. 感知、認知與交互作用

- (1) ALICE: Geometry and lighting
- (2) CALLIGRAMME: Linear logic, proof networks and categorial grammars
- (3) MAGRIT: Visual augmentation of complex environments
- (4) MAIA: Autonomous intelligent machines
- (5) ORPAILLEUR: Knowledge representation, reasoning
- (6) PAROLE: Analysis, perception and recognition of speech
- (7) TALARIS: Natural language processing: representation, inference and semantics

## 5. 生物學、醫學與環境科學計算

- (1) BIGS: Biology, genetic and statistics
- (2) CORTEX: Neuromimetic intelligence
- (3) MASAIE: Tools and models of nonlinear control theory for epidemiology and immunology

## 三. 雷恩-大西洋布列塔尼地區 (Rennes-Bretagne Atlantique) 研究中心

該中心創於 1980 年，計有員工 575 名，下設 27 個研究小組，研究領域包括(1)網絡與分散式運算；(2)軟體與建構；(3)訊號與數位影像；(4)資料與交互作用。

網址：<http://www.inria.fr/rennes/>

該研究中心所屬的實驗室依研究主題劃分如下：

### 1. 應用數學、計算與模擬：

- (1) IPSO - Invariant Preserving Solvers
- (2) ASPI - Applications of interacting particle systems to statistics
- (3) I4S - Statistical Inference for Structural Health Monitoring

### 2. 演算、編程、軟體與架構

- (1) CELTIQUE - Software certification with semantic analysis
- (2) ESPRESSO - Synchronous programming for the trusted component-based engineering of embedded systems and mission-critical systems
- (3) S4 - System synthesis and supervision, scenarios
- (4) VERTECS - Verification models and techniques applied to testing and control of reactive systems
- (5) ALF - Amdahl's Law is Forever
- (6) CAIRN - Energy Efficient Computing Architectures with Embedded Reconfigurable Resources

### 3. 網絡、系統與服務、分散式運算

- (1) DIONYSOS - Dependability Interoperability and performance aNalySiS Of networks
- (2) DISTRIBCOM - Distributed and Iterative Algorithms for the Management of Telecommunications Systems
- (3) ACES - Ambient computing and embedded systems
- (4) ADEPT - Algorithms for Dynamic Dependable Systems
- (5) ASAP - As Scalable As Possible: foundations of large scale dynamic distributed systems
- (6) ASCOLA - Aspect and composition languages
- (7) ATLANMOD - Modeling Technologies for Software Production, Operation, and Evolution
- (8) MYRIADS - Design and Implementation of Autonomous Distributed Systems
- (9) TRISKELL - Reliable and efficient component based software engineering
- (10) KERDATA - Cloud and Grid Storage for Very Large Distributed Data

#### 4. 感知、認知與交互作用

- (1) TEMICS - Digital image processing, modeling and communication
- (2) TEXMEX - Multimedia content-based indexing
- (3) BUNRAKU - Perception, decision and action of real and virtual humans in virtual environments and impact on real environments
- (4) ATLAS - Complex data management in distributed systems
- (5) DREAM - Diagnosing, Recommending Actions and Modelling
- (6) LAGADIC - Visual servoing in robotics, computer vision, and augmented reality
- (7) METISS - Speech and sound data modeling and processing

#### 5. 生物學、醫學與環境科學計算

- (1) FLUMINANCE - Fluid Flow Analysis, Description and Control from Image Sequences
- (2) SAGE - Simulations and Algorithms on Grids for Environment
- (3) SERPICO - Space-time RePresentation, Imaging and cellular dynamics of molecular Complexes
- (4) SYMBIOSE - Biological systems and models, bioinformatics and sequences
- (5) VISAGES - Vision, Action and information management System in health

#### 四. 格勒諾博-隆河-阿爾卑斯地區 (Grenoble-Rhône-Alpes) 研究中心

該中心創於 1992 年，計有員工 660 名，下設 30 個研究小組，研究主題包括(1)生物資訊、(2)電腦高效能叢集與網格計算；(3)複雜物理現象如山崩、雪崩、水災、人類活動等等的模擬、(4)新興網絡方式；(5)嵌入式系統軟體。

網址：[www.inria.fr/grenoble](http://www.inria.fr/grenoble)

該研究中心所屬的實驗室如下：

- (1) ARENAIRE - Computer arithmetic
- (2) ARTIS - Acquisition, representation and transformations for image synthesis
- (3) BIPOP - Modelling, Simulation, Control and Optimization of Non-Smooth Dynamical Systems
- (4) COMPSYS - Compilation and embedded computing systems
- (5) E-MOTION - Geometry and Probability for Motion and Action
- (6) EVASION - Virtual environments for animation and image synthesis of natural objects
- (7) EXMO - Computer mediated exchange of structured knowledge
- (8) GRAAL - Algorithms and Scheduling for Distributed Heterogeneous Platforms
- (9) IBIS - Modeling, simulation, measurement, and control of bacterial regulatory networks
- (10) LEAR - Learning and recognition in vision
- (11) MESCAL - Middleware efficiently scalable
- (12) MISTIS - Modelling and Inference of Complex and Structured Stochastic Systems
- (13) MOAIS - Programming and scheduling design for Applications in Interactive Simulation
- (14) MOISE - Modelling, Observations, Identification for Environmental Sciences
- (15) NECS - Networked Controlled Systems

- (16) NUMED - Numerical Medicine
- (17) OPALE - Optimization and control, numerical algorithms and integration of complex multidiscipline systems governed by PDE
- (18) PERCEPTION - Interpretation and Modelling of Images and Videos
- (19) PLANETE - Protocols and applications for the Internet
- (20) POP ART - Programming languages, Operating Systems, Parallelism, and Aspects for Real-Time
- (21) PRIMA - Perception, recognition and integration for observation of activity
- (22) RESO - Protocols and softwares for very high-performance network
- (23) SARDES - System architecture for reflective distributed computing environments
- (24) VASY - System validation - Research and applications
- (25) WAM - Web, adaptation and multimedia
- (26) AMAZONES - Ambient Middleware Architectures: Service-Oriented, Networked, Efficient and Secured
- (27) BAMBOO - An algorithmic view on genomes, cells, and environments
- (28) D-NET - Dynamic Networks
- (29) DRACULA - Multi-Scale modelling of cell dynamics: application to hematopoiesis
- (30) SWING - Smart Wireless Networking

## 五. 巴黎-Rocquencourt 研究中心

該中心創於 1967 年，計有員工 600 名，下設 34 個研究小組，研究領域包括(1)應用數學、計算與模擬；(2)演算、編程、軟體與建構；(3)網絡、系統暨服務、分散式運算；(4)感知、認知與交互作用；(5)生命暨環境科學的資通訊科技。

網址：[www.inria.fr/rocquencourt](http://www.inria.fr/rocquencourt)

該研究中心所屬的實驗室依研究主題劃分如下：

### 1. 應用數學、計算與模擬：

- (1) CAD - Computer Aided Design
- (2) GAMMA3 - Automatic mesh generation and advanced methods
- (3) MICMAC - Methods and engineering of multiscale computing from atom to continuum
- (4) POEMS - Wave propagation: mathematical analysis and simulation
- (5) MATHEI - Financial mathematics
- (6) CLASSIC - Computational Learning, Aggregation, Supervised Statistical, Inference, and Classification
- (7) METALAU - Methods, algorithms and software in automatic control

### 2. 演算、編程、軟體與架構

- (1) ABSTRACTION - Abstract Interpretation and Static Analysis
- (2) CONSTRAINTES - Constraint programming
- (3) FORMES - Formal Methods for Embedded Systems
- (4) GALLIUM - Programming languages, types, compilation and proofs

- (5) MOSCOVA - Mobility, security, concurrence, verification and analysis
- (6) PI.R2 - Design, study and implementation of languages for proofs and programs
- (7) ALGORITHMS – Algorithms
- (8) CASCADE - Construction and Analysis of Systems for Confidentiality and Authenticity of Data and Entities
- (9) SALSA - Solvers for Algebraic Systems and Applications
- (10) SECRET - Security, Cryptology and Transmissions
- (11) AOSTE - Models and methods of analysis and optimization for systems with real-time and embedding constraints

### 3. 網絡、系統與服務、分散式運算

- (1) GANG - Networks, Graphs and Algorithms
- (2) HIPERCOM - High performance communication
- (3) RAP - Networks, Algorithms and Probabilities
- (4) TREC - Theory of networks and communications
- (5) ARLES - Software architectures and distributed systems
- (6) NETQUEST - Network Query Processing
- (7) REGAL - Large-Scale Distributed Systems and Applications

### 4. 感知、認知與交互作用

- (1) IMEDIA - Image and multimedia indexing, browsing and retrieval
- (2) WILLOW - Models of visual object recognition and scene understanding
- (3) AXIS - Usage-centered design, analysis and improvement of information systems
- (4) SMIS - Secured and Mobile Information Systems
- (5) IMARA - Informatics, Mathematics and Automation for La Route Automatisée
- (6) ALPAGE - Large-scale deep linguistic processing

### 5. 生物學、醫學與環境科學計算

- (1) CLIME - Coupling environmental data and simulation models for software integration
- (2) ESTIME - Parameter estimation and modeling in heterogeneous media
- (3) BANG - Nonlinear Analysis for Biology and Geophysical flows
- (4) MACS - Modeling, analysis and control in computational structural dynamics
- (5) REO - Numerical simulation of biological flows
- (6) SISYPHE - Signals and SYstems in PHysiology & Engineering
- (7) NEUROMATHCOMP - Mathematical and Computational Neuroscience

## 六. 索非亞安提波利-地中海地區 (Sophia Antipolis-Méditerranée) 研究中心

該中心創於 1983 年，計有員工 492 名，下設 32 個研究小組，研究領域包括(1)應用數學、計算與模擬；(2)演算、編程、軟體與建構；(3)網絡、系統暨服務、分散式運算；(4)感知、認知與交互作用；(5)生命暨環境科學的資通訊科技。

網址：www-sop.inria.fr



該研究中心所屬的實驗室依研究主題劃分如下：

**1. 應用數學、計算與模擬：**

- (1) APICS - Analysis and Problems of Inverse type in Control and Signal processing
- (2) NACHOS - Numerical modeling and high performance computing for evolution problems in complex domains and heterogeneous media
- (3) OPALE - Optimization and control, numerical algorithms and integration of complex multidiscipline systems governed by PDE
- (4) PUMAS - Plasma, tUrbulences, Modelling, Approximation and Simulation
- (5) SMASH - Simulation, modeling and analysis of heterogeneous systems
- (6) TOSCA - TO Simulate and CALibrate stochastic models
- (7) MARELLE - Mathematical, Reasoning and Software

**2. 演算、編程、軟體與架構**

- (1) AOSTE - Models and methods of analysis and optimization for systems with real-time and embedding constraints
- (2) GALAAD - Geometry, algebra, algorithms
- (3) GEOMETRICA - Geometric computing
- (4) MARELLE - Mathematical, Reasoning and Software

**3. 網絡、系統與服務、分散式運算**

- (1) FOCUS - "Foundations of Component-based Ubiquitous Systems"
- (2) INDES - Informatique Diffuse et Sécurisée
- (3) LOGNET - Logical Networks: Self-organizing Overlay Networks and Programmable Overlay Computing Systems
- (4) MAESTRO - Models for the performance analysis and the control of networks
- (5) MASCOTTE - Algorithms, simulation, combinatorics and optimization for telecommunications
- (6) OASIS - Active objects, semantics, Internet and security
- (7) PLANETE - Protocols and applications for the Internet

**4. 感知、認知與交互作用**

- (1) ATLAS - Complex data management in distributed systems
- (2) ARIANA - Inverse problems in earth monitoring
- (3) AROBAS - Advanced Robotics and Autonomous Systems
- (4) AXIS - Usage-centered design, analysis and improvement of information systems
- (5) COPRIN - Constraints solving, optimization and robust interval analysis
- (6) EDELWEISS - Exchanges, Documents, Extraction, Languages, Web, Ergonomics, Interactions, Semantics, Servers
- (7) GraphIK - GRAPHS for Inferences and Knowledge representation
- (8) PULSAR - Perception Understanding Learning Systems for Activity Recognition
- (9) REVES - Rendering and virtual environments with sound

## 5. 生物學、醫學與環境科學計算

- (1) ABS - Algorithms, Biology, Structure
- (2) ASCLEPIOS - Analysis and Simulation of Biomedical Images
- (3) ATHENA - Computational Imaging of the Central Nervous System
- (4) COMORE - Modeling and control of renewable resources
- (5) DEMAR - Artificial movement and gait restoration
- (6) MERE - Water Resource Modeling
- (7) NEUROMATHCOMP - Mathematical and Computational Neuroscience
- (8) VIRTUAL PLANTS - Modeling plant morphogenesis at different scales, from genes to phenotype

## 七. 里耳-北歐 (Lille-Nord Europ) 研究中心

該中心創於 2008 年，計有員工 220 名，下設 12 個研究小組，研究主題包括(1)生物系統、(2)認知系統、(3)通訊系統、(4)數位系統、(5)象徵系統。

網址：[www.inria.fr/lille](http://www.inria.fr/lille)

該研究中心所屬的實驗室依研究主題劃分如下：

### 1. 應用數學、計算與模擬：

- (1) SIMPAF - Simulations and Modeling for Particles and Fluids
- (2) DOLPHIN - Parallel Cooperative Multi-criteria Optimization
- (3) SEQUEL - Sequential Learning
- (4) ALIEN - Algebra for Digital Identification and Estimation

### 2. 演算、編程、軟體與架構

- (1) ATEAMS - Analysis and Transformation based on rELiAble tool compositions
- (2) DART - Contributions of the Data Parallelism to Real Time

### 3. 網絡、系統與服務、分散式運算

- (1) ADAM - Adaptive Distributed Applications and Middleware
- (2) POPS - System and Networking for Portable Objects Proved to be Safe
- (3) RMOD - Analyses and Languages Constructs for Object-Oriented Application Evolution

### 4. 感知、認知與交互作用

- (1) MINT - &NBSP
- (2) MOSTRARE - Modeling Tree Structures, Machine Learning, and Information Extraction

### 5. 生物學、醫學與環境科學計算

- (1) SEQUOIA2 - &NBSP
- (2) SHAMAN - Simulation in Healthcare for Advances Medical Applications

## 八. 薩克雷-大巴黎地區 (Saclay-île de France) 研究中心

該中心創於 2008 年，計有員工 360 名，下設 26 個研究小組，研究主題包括(1)生物系統、

(2)認知系統、(3)通訊系統、(4)數位系統、(5)象徵系統。

網址：[www.inria.fr/saclay](http://www.inria.fr/saclay)

該研究中心所屬的實驗室依研究主題劃分如下：

#### 1. 應用數學、計算與模擬：

- (5) DEFI - Shape reconstruction and identification
- (6) REGULARITY - Probabilistic modelling of irregularity and application to uncertainties management
- (7) SELECT - Model selection in statistical learning
- (8) TAO - Machine Learning and Optimisation
- (9) ALIEN - Algebra for Digital Identification and Estimation
- (10) COMMANDS - Control, Optimization, Models, Methods and Applications for Nonlinear Dynamical Systems
- (11) DISCO - Dynamical Interconnected Systems in COmplex Environments
- (12) MAXPLUS - Max-plus algebras and mathematics of decision

#### 2. 演算、編程、軟體與架構

- (1) COMETE - Concurrency, Mobility and Transactions
- (2) MEXICO - Modeling and Exploitation of Interaction and Concurrency
- (3) PARSIFAL - Proof search and reasoning with logic specifications
- (4) PROVAL - Proofs of programs
- (5) SECSI - Security of information systems
- (6) TYPICAL - Types, Logic and computing
- (7) GEOMETRICA - Geometric computing
- (8) TANC - Algorithmic number theory for cryptology
- (9) ALCHEMY - Architectures, Languages and Compilers to Harness the End of Moore Years

#### 3. 網絡、系統與服務、分散式運算

- (1) HIPERCOM - High performance communication
- (2) ASAP - As Scalable As Possible: foundations of large scale dynamic distributed systems
- (3) GRAND-LARGE - Global parallel and distributed computing

#### 4. 感知、認知與交互作用

- (1) AVIZ - Analysis and Visualization
- (2) IN-SITU - Situated interaction
- (3) DAHU - Verification in databases
- (4) LEO - Distributed and heterogeneous data and knowledge

#### 5. 生物學、醫學與環境科學計算

- (1) DIGIPLANTE - Modelling plants growth and plants architecture
- (2) AMIB - Algorithms and Models for Integrative Biology

- (3) GALEN - Organ Modeling through Extraction, Representation and Understanding of Medical Image Content
- (4) PARIETAL - Modelling brain structure, function and variability based on high-field MRI data