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## Institut Farman

Rapport Hcéres

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agence d'évaluation de la recherche  
et de l'enseignement supérieur

Research Units

AERES report on unit:

Institut Farman

Under the supervision of  
the following institutions  
and research bodies:

ENS Cachan

Centre National de la Recherche Scientifique - CNRS



December 2013



agence d'évaluation de la recherche  
et de l'enseignement supérieur

Department for the evaluation of  
research units

*On behalf of AERES, pursuant to the Decree  
of 3 november 2006<sup>1</sup>,*

- Mr. Didier HOUSSIN, president
- Mr. Pierre GLAUDES, head of the  
evaluation of research units department

*On behalf of the expert committee,*

- Mr. Martin WIRSING, chair of the  
committee

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<sup>1</sup> The AERES President "signs [...], the evaluation reports, [...] countersigned for each department by the director concerned" (Article 9, paragraph 3 of the Decree n ° 2006-1334 of 3 November 2006, as amended).



# Evaluation report

This report is the result of the evaluation by the experts committee, the composition of which is specified below. The assessment contained herein are the expression of independent and collegial deliberation of the committee.

Unit name:	Institut Farman
Unit acronym:	
Label requested:	FR
Present no.:	FR 3311
Name of Director (2013-2014):	Mr Christian REY
Name of Project Leader (2015-2019):	Mr Florian DE VUYST

## Expert committee members

Chair : Mr Martin WIRSING, Ludwigs-Maximilian Universität München (Germany)

Experts :

- Mr Philippe DE GROOTE, INRIA, Nancy
- Mr Roberto DI COSMO, Université Paris Diderot-Paris 7  
(representative of the CNU)
- Mr Matthieu LATAPY, CNRS (representative of the CoNRS)

Scientific delegate representing the AERES:

Mr Olivier Roux



## 1 • Introduction

### Organization of the evaluation

The evaluation of Institut Farman was done mainly during the evaluation of one of its unit : the LSV (Laboratoire Spécification et Vérification). Nevertheless, a presentation of Institut Farman took place during each visits of its entities. The reports written on each unit composing the Federation make explicit the interest and interaction between the unit and the Federation.

### History, geographical location of the unit and description of its scientific activities

The Farman Institute was founded in 2006 by ENS Cachan as an interdisciplinary research center in the field of modelling, simulation, and validation of complex systems. The five research laboratories involved are

- Centre de Mathématiques et de Leurs Applications (CMLA), UMR CNRS 8536 ;
- Laboratoire de Mécanique et de Technologie (LMT), UMR CNRS 8535 ;
- Laboratoire Spécification et Vérification (LSV), UMR CNRS 8643 ;
- Laboratoire Universitaire de Recherche en Production Automatisée (LURPA), EA 1385 ;
- Laboratoire Systèmes et Applications des Technologies de l'Information et de l'Energie (SATIE), UMR CNRS 8029.

Since 2010 it is a labelled CNRS Research Federation.

### Management team

The current Director is M. Christian REY (LMT). The next Director will be M. Florian DE VUYST (CMLA) starting January 2015.

### Unit workforce specifically belonging to the Federation

There is no personnel which belongs specifically to the Federation.



## 2 • Assessment of the unit

The Farman Institute is an interdisciplinary research center in the field of complex systems. It initiates and coordinates interdisciplinary projects for modelling, controlling and optimizing complex (physical, hybrid or software) systems. In particular, the Farman Institute focusses on problems identified by the industrial or institutional partners of ENS Cachan.

Although the Farman Institute has a rather small budget (~ 80.000 Euros/year) it unites potentially all the personnel of the five laboratories, i.e. more than 150 researchers, 30 technicians, and 250 PhD students and postdocs.

### Strengths and opportunities related to the context

The Farman Institute is an active meeting place fostering the exchange of ideas and collaborative interdisciplinary work.

In the past five years it has coordinated more than 25 interdisciplinary scientific projects each involving at least two of the ENS research laboratories. This has led to a considerable research output of more than 60 joint publications (with co-authors of at least two ENS research laboratories). Several of these research projects were also the basis for externally funded projects or long term collaborations which are pursued outside of the Institute. An example is the label of “CUDA Research Center” which has been awarded to ENS Cachan by NVIDIA for the work of the Farman project FSI-LBM-GPU.

The Institute is central for the life and organization of ENS Cachan. By organizing the so-called Farman events in the field of complex systems the Institute brings together the members of all five research laboratories of the different groups of ENS Cachan.

The Institute Farman contributes also very well to the training through research at ENS: about 20 PhD students are involved in the Farman projects; two theses have been awarded with scientific prizes for best PhD theses. Moreover, the cycle of Farman events counts as a module of the doctoral school on “Sciences Pratiques”. In 2013 two new forms of projects have been created which aim at interdisciplinary training. These projects of type “Formation” and “Industrial issue” contribute to the training of PhD students and the live long training for industry.

By serving as a contact and interaction point with industry and external institutions, the Farman Institute plays an important role for the relations of ENS with external partners. Because of its association with the RTRA Digiteo, the Institute has been able to invite about ten guest professors per year for short stays at ENS. The Farman Institute organizes also meetings with industry and has initiated a new kind of projects for fostering the collaboration of ENS with industrial partners.

The strategic plan of the Institute for the next five years is convincing. The scientific goals and research questions are clearly stated and important for solving the challenges of our complex society. It is also very good to strengthen the forms of collaboration by introducing the new forms of “industrial” and “formation” projects. The plans for extending the Institute by further research laboratories are persuasive. Concerning the transition to Saclay, it is seen as very positive that the Farman Institute is open for restructuration or possible mergers with similar institutions.

### Weaknesses and threats related to the context

The project of constructing a building for the Farman Institute has been cancelled although it was already in advanced stage. Later the remaining budget for the building could be used in a meaningful way; however, it will be important to find an appropriate location for the Farman Institute on the Saclay campus. Otherwise, it may be difficult for Farman to assume its important role as contact point and enabler of interdisciplinary research.

### Recommendations

The Farman Institute should actively pursue and expand its role as a place for interaction of the different research laboratories of ENS and as an initiator and coordinator of interdisciplinary projects.



### 3 • Supervising bodies' general comments

Cachan, le 8 Juillet 2014

Le président  
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Monsieur Pierre GLAUDES  
Directeur de la section des unités de  
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75002 Paris

N/Réf.: PPZ/SP/CD 14-172

Objet : Réponse au rapport d'évaluation - S2SF150007539 - Institut Farman FR 331 - 0940607Z

Monsieur le Directeur,

L'Ecole normale supérieure de Cachan a pris connaissance du rapport d'évaluation de l'institut Farman. Au nom de la structure fédérative, elle remercie vivement le comité d'experts et l'AERES pour cette évaluation et pour la pertinence des observations détaillées et des recommandations contenues dans le rapport.

L'Ecole normale supérieure de Cachan se félicite de l'évaluation positive de la structure fédérative par l'AERES et la reconnaissance de l'importance de son rôle dans le soutien à l'interdisciplinarité et à la vie scientifique de l'établissement. Ainsi que son positionnement, son rayonnement, son activité partenariale et son implication dans la formation par la recherche. Le projet architectural de la nouvelle ENS sur le plateau de Saclay intègre le rôle des instituts interdisciplinaires et permettra de donner à l'institut Farman des capacités de développement importantes.

L'établissement souhaite également remercier le directeur de l'unité, Christian Rey, et son directeur scientifique Laurent Fribourg ainsi que les directeurs des laboratoires de recherche de Farman pour leur action dynamique et fructueuse, malgré les difficultés rencontrées, et remercie également les porteurs du projet pour les 5 années à venir, en particulier Florian De Vuyst, le nouveau directeur, et Eric Vour'ch le directeur scientifique. L'ENS souhaite également attirer votre attention sur les remarques de Florian De Vuyst sur ce rapport, remarques que vous trouverez en annexe de cette lettre.

Je vous prie d'agréer, Monsieur le Directeur, l'expression de mes salutations distinguées.

Pierre Paul ZALIO



Président de l'ENS Cachan



## **Evaluation report AERES S2SF150007539 - Institut Farman FR 331 - 0940607Z**

On behalf the Farman Institute FR 311 and its affiliated laboratories, I would like first to thank the AERES committee members for their evaluation report, for fruitful feedback on the Institute and valuable comments about its role within ENS Cachan, the strategic plan and development axes.

### **Management team**

From 2006 up to end of 2013, the Director has been Mr. Christian Rey (LMT). We would like to add some comments about the Farman Institute governance. The governance has been deliberately chosen as light as possible. Christian Rey has been assisted by Mr. Laurent Fribourg (LSV) as Scientific Director, from 2006 up to 2013. The governance is also ensured by a short committee composed of the Directors of each affiliated lab, or representative people.

### **Unit workforce specifically belonging to the Federation**

Let us mention that the Farman Institute in 2010 has been awarded for the EquipEx DIGISCOPE (ANR-10-EQPX-26-1) and manages the high-end visualization large display wall named SHIVA (SHared Interaction & Visualization Area) . The Farman Institute is part of the DIGISCOPE Consortium composed of reference Institutions over the Paris-Saclay University. The SHIVA equipment promotes the setup of collaborative projects on data analysis, data visualization, mining and exploration within the five labs of the Institute. Of course SHIVA is also open for exploring new paradigms from the educational side, but also as an experimental platform for industrial projects.

It has not been possible to show the Equipment to the AERES committee in december 2013 because it was not still operating at this time. For information, the inaugural ceremony of SHIVA took place at ENS Cachan on June 2014 the 26th.

Farman's SHIVA technological platform is today one of the top reference equipments of ENS Cachan.

### **Farman events**

Let us also mention to the committee the series of NCMIP (New Computational Methods for Inverse Problems) conferences, supported by Farman. The annual NCMIP Conferences were initiated in 2011, organized by the SATIE lab, with IOP Conference proceedings. NCMIP knows a constant growth and makes the Farman Institute even more visible.

### **Opportunities related to the context**

Let us also emphasize the 'High Performance Computing' (HPC) dimension of the strategic plan of the Institute: Farman will also play the role of a collaborative and "best practice" sharing platform for High Performance Computing at ENS Cachan.

We are also aware that the Farman Institute can play an important 'structuring' role, possibly 'merging' role within the Paris-Saclay University in the field of modeling, simulation and validation of 'real life' complex systems, involving formation, research and industry partnership dimensions. We would like to thank the AERES committee for their support in this reflection.

Florian De Vuyst  
Director of the Farman Institute FR 3311

