



## Cognac G - Cognition and action group

### Rapport Hcéres

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

Department for the evaluation of  
research units

AERES report on unit:

Cognition and Action Group

Cognac G

Under the supervision of  
the following institutions  
and research bodies:

Centre National de la Recherche Scientifique

Université Paris Descartes

Service de Santé des Armées



January 2013



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

Research Units Department

President of AERES

**Didier Houssin**

Research Units Department

*Department Head*

**Pierre Glaudes**



# Grading

Once the visits for the 2012-2013 evaluation campaign had been completed, the chairpersons of the expert committees, who met per disciplinary group, proceeded to attribute a score to the research units in their group (and, when necessary, for these units' in-house teams).

This score (A+, A, B, C) concerned each of the six criteria defined by the AERES.

NN (not-scored) attached to a criteria indicate that this one was not applicable to the particular case of this research unit or this team.

**Criterion 1 - C1:** Scientific outputs and quality;

**Criterion 2 - C2:** Academic reputation and appeal;

**Criterion 3 - C3:** Interactions with the social, economic and cultural environment;

**Criterion 4 - C4:** Organisation and life of the institution (or of the team);

**Criterion 5 - C5:** Involvement in training through research;

**Criterion 6 - C6:** Strategy and five-year plan.

With respect to this score, the research unit concerned by this report received the following grades:

- Grading table of the unit: **Cognition and Action Group**

C1	C2	C3	C4	C5	C6
A	A	A+	NN	A	A+



## Evaluation report

Unit name:	Cognition and Action Group
Unit acronym:	Cognac-G
Label requested:	UMR
Present no.:	None
Name of Director (2012-2013):	None
Name of Project Leader (2014-2018):	Mr Pierre-Paul VIDAL

## Expert committee members

Chair: Mr Bernard BIOLAC, CNRS

### Experts:

Mr Patrice BINDER, Département des Partenariats et des Relations Extérieures, INSERM

Mr Jose Maria DELGADO GARCIA, Universidad Pablo de Olavide, Séville, Spain

Mr Martin GIURFA, CNRS, Université Paul Sabatier, Toulouse

Mr Francesco LACQUANITI, University of Rome Tor Vergata, Italy

Mr Jean Yves LE COZ, Technocentre Renault

Ms Marion LUYAT, Université de Lille

Mr Emmanuel MELLET, Groupement d'Intérêt Public Cyceron  
(representative of CoNRS)

Mr Jérôme TROUSLARD, Université de Marseille (representative of CNU)

### Scientific delegate representing the AERES:

Mr Yves TROTTER

### Representative(s) of the unit's supervising institutions and bodies:

Ms FAUCOMPRE, IRBA

Mr Bernard POULAIN, CNRS

Mr Stefano MARULLO, Université Paris Descartes



## 1 • Introduction

### History and geographical location of the unit:

A short introduction is required to understand the genesis of the Cognac project. At the departure of Mr Alain BERTHOZ to the College de France, in 1997, some of the members of his UMR remained at the Cordelier and created a new UMR. The first quadriennial period of the LNRS (Laboratoire de Neurobiologie des Réseaux Sensorimoteurs) was devoted to its organization. The unit started with five founding members and no engineers or technicians, on premises condemned by the Ministry, which necessitated to move to the Centre Medical des Saints Pères. The majority of the publications from this period were published in Experimental Brain Research. During the next two quadriennial contracts, the LNRS developed with great encouragement and support from the CNRS, the Paris Descartes University and the Ministry from these early days. It ended up with four teams and 40 staff members. In the years that followed, the unit went from publishing in Experimental Brain Research to the Journal of Neuroscience by way of the Journal of Neurophysiology. This trajectory was more or less similar to that of the other teams of the LNRS, with other journals depending on the field. The capacity to supply innovative projects had definitely improved.

In 2008, at the end of the third quadriennial contract of the LNRS, it was proposed two institutional solutions for the future. Firstly, the present group, with the addition of two teams, which wished to join, could be perpetuated under a new name, the CESEM (Sensorimotor Study Center). Secondly, the fusion of the neuroscience UMR on site could lead to the formation of a Neuroscience Institute. The second solution was preferred. The other UMRs did not approve the creation of the Institute and thus the current director is heading the newly founded CESeM for what is a fourth quadriennial contract. That led to 2012 with no major changes except that the former LNRS counted now six teams and 53 staff members. Because an Institute of Neuroscience could not be created with the other CNRS UMRs of the Centre Biomédical des Saints Pères, it was planned to create with IRBA (the military biomedical institute for the French ministry of Defense), ENS (Ecole Normale Supérieure) Cachan and Thales (Electronic systems company), a smaller structure call Cognac G (Cognition and Action Group, see project) with the perspective to create an UMR.

The Cognac G location will be shared between the Hôpital du Val de Grâce and the UFR Biomédicale des Saints Pères.

### Management team:

M. Pierre-Paul VIDAL

### AERES nomenclature:

SVE1\_LS4 Physiology, physiopathology, medical systems biology, SVE1\_LS5 Neurobiology



## Unit workforce:

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
<b>N1:</b> Permanent professors and similar positions		6	6
<b>N2:</b> Permanent researchers from Institutions and similar positions		8	8
<b>N3:</b> Other permanent staff (without research duties)		7	7
<b>N4:</b> Other professors (Emeritus Professor, on-contract Professor, etc.)		0	
<b>N5:</b> Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)		3	3
<b>N6:</b> Other contractual staff (without research duties)			
<b>TOTAL N1 to N6</b>		24	24
Percentage of producers	<i>100 %</i>		

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students		
Theses defended		
Postdoctoral students having spent at least 12 months in the unit*		
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions		12



## 2 • Assessment of the unit

### Strengths and opportunities:

The « Cognac-G » project is original, innovative and multidisciplinary. Its main purpose aims at developing non invasive tools to quantify the behaviour of individuals, their biological, psychological and sociological characteristics and their genotypes. Therefore, by collecting such an amount of information, this project proposes to build databases in genomics, proteomics and ethomics to allow pertinent data mining, which is currently in a desperate shortage. This unique approach will confer a strong political, economical and medical leverage to establish decision making in matters of social and health prediction and prevention.

In term of research teams, the entity « Cognac G » has four origins : (1) a part of the past unity directed by P.P. Vidal (CESEM, UMR CNRS 8194, Univ. Paris Descartes) (2) some groups of the SSA including the Neurological Department of the Val de Grâce Hospital (3) a core of mathematicians of the UMR CMLA (Centre de Mathématiques et de leurs Applications) at the ENS Cachan, (4) the team directed by a Head Engineer in Thales Training and Simulation.

To construct databases, the entity will use the follow-up of High Maintenance Cohorts (HMC) compound with soldiers, athletes and patients. However, these approaches in humans, mainly led in the sensory-motor field, will be paralleled by research in animal models. Therefore these databases will permit a consistent translational data mining oscillating from normal to pathological situations and vice-versa.

This project includes real strengths. In humans, the proposal of combining appropriate sensors and actuators appears quite pertinent to define: decision processing, perceptivo-motor style and collaborative intelligence. Some teams of the past CESEM, in collaboration with Thales or Sport Authorities (FFR), are particularly experienced in these fields (sensori-motor transformation, vestibular function, flight simulation, robot to train the ruck...). Other members of CESEM have studied, in high level athletes, the human adaptation and its limits and how to avoid switching from an overreached (OR) situation to an overtraining syndrome (OTS). Finally, CESEM has conducted, in animal models, several studies on sensori-motor post-lesional plasticity: control of gaze and posture, skeletal geometry, scoliosis, trauma of the facial system, neuromuscular junction, all of them are relevant for the « Cognac G » project.

Alternatively, in animal models, the IRBA possesses a leadership position in the investigation concerning: chemical stress (dysfunctions of cholinesterases) and central nervous system irradiation. Besides IRBA plays a major role in the specification fields of aeronautics and military equipment (partnership with Thales, for instance with the Helmet Mounted Displays, HMPs). Moreover, one has to insist on the main contribution of the Neurological Department of the Val de Grâce Hospital concerning the taking care of patients suffering from brain irradiation sequelae.

Finally the CMLA of the ENS-Cachan has a strong expertise in the exploitation of the massive data flows generated. It will contribute to quantify human and animal behaviors and thereby to organize databases and datamining (preprocessing, exploration, reduction visualization, design of medical monitoring and diagnosis systems).

One may take into consideration that the entity « Cognac G » disposes of appropriate core and animal facilities (Université Paris Descartes and IRBA). Moreover, it benefits from the use of several major platforms (sensory-motor platform, flight simulators, sleep laboratory, night vision laboratory ...) provided by Université Paris Descartes, IRBA, and Thales. Furthermore, Cognac G will collaborate with French military hospitals namely Val de Grâce Hospital through several departments (neurology, oncology, radiology, rehabilitation and intensive cares).

### Weaknesses and threats:

There is some vagueness on how to address a number of critical issues concerning the necessary and sufficient parameters that capture the individual behavior. In the same vein, some operations which concern recording of cognitive and psychological parameters need to be better specified (number of subjects, type of questionnaires ....).

If multidisciplinary approaches are a real originality of this project they must not be sources of unwanted dispersion.

How research communities will handle data needs to be specified.

A calendar should be given on the temporal schedule of the different tasks.

Some precisions are necessary concerning the definitive group composition and the concise appartenance of part-time researchers and technicians belonging to the different structures (CNRS, University, SSA, CMLA, Thales).





A particular attention has to be planned to keep confidentiality of participants data (chiefly SSA).

The inconvenience to use separate buildings will have to be surmounted.

### Recommendations:

The originality of the project will have to emerge from the robustness of the future structure of this entity. Indeed, even though the management qualities of the current director are well known, he will have to deploy energy to install a strong synergy between physiologists, clinicians, mathematicians and engineers. A gap may exist between a written project and the reality of its daily application (using databases for data mining ...). Moreover, the programs will take place in different sites, which is another putative difficulty. There is a necessity to reinforce certain fields with high level scientists such as human physiology and cognitive sciences to allow a concise identification of the critical physiological parameters.

Finally, one may insist on the shared enthusiasm of the participants and the strong support of the academic partners (CNRS, Université Paris Descartes, SSA) as well as that of the associated ones (ENS Cachan, Thales).

The committee is strongly supportive of the creation of the entity « Cognac G ». It will be one of the first to address the issue of the interindividual vulnerability and, thereby, should have an international impact.



### 3 • Detailed assessments

#### Assessment of scientific quality and outputs:

The aim of this new entity is multidisciplinary, translational and highly innovative and consists in building databases for datamining in normal and pathological situations.

Such an approach requires researchers originating from varied backgrounds (physiologists, clinicians, mathematicians, engineers) and their scientific quality and production are based on their past works and achievements. The analysis of the latter brings out that certain scientists, included in the project, are of high international level, alternatively others have been more widely involved in methodological and technological developments.

Taken together the different components of the entity indicate 142 publications since 2007 in international peer reviewed journals. Some of these journals are among the best of the speciality. One can cite articles in « The Lancet, Annals of Neurology, J. Neurosc., J. Neurophysiol., J. Neurochem., Neurobiology of Diseases, J. Physiol. (London), Exp. Br. Res., Neurooncol., Toxicology, Endocrinology, Current Opin. Oncol., Machine Learning Journal, Trans. Biomed. Eng., Theory, J. of Mathematical Imaging and Vision, Vision .... ».

Nine patents were filled during the last 4 years by certain components of the entity (cellular imaging, detection and prognosis of Parkinson disease, recognition of objects and shapes, video demultiplexing based on meaningful mode of extraction).

One can quote some pertinent researches led by the different participants. The CESEM has conducted quite extensive investigations in the field of the sensori-motor transformation. Thus, by studying three main types of information (visual, vestibular, somatosensory-proprioceptive) it has coined the concept of perceptivo-motor style. Such a concept, applied to athlete, patient, soldier will allow to predict how her/his motor system will react or express its plasticity in various contexts.

The CESEM, in collaboration with the IRBA, has developed some studies on the muscular junction and on the acetylcholinesterase (AChE) structure. Particularly, it has been searched how it was possible to act on the mechanism of inhibition by the organophosphorus compound (OPs).

Among the original works carried out by the IRBA it can be cited the studies on the mental fatigue and this on the perception of image similarities. Another quite innovative research is the sensor fusion and end-to-end latencies in projected images with the manufacture of helmet mounted displays (HMDs).

Finally, another major collaboration concerns Thales and the CESEM which have developed, for the first time in the world, a rugby scrum simulator.

#### Assessment of the unit's academic reputation and appeal:

The entity « Cognac G » is structured in one team with various competencies. If it is created; this will be the first unity of this nature in France and may be in Europe. Starting with about 22-24 fulltime or part time searchers or technicians (CNRS, University, SSA, ENS-Cachan, Thales, INSEP (Institut National du Sport, de l'Expertise et de la Performance), this innovative project should be attractive for senior investigators and postdoctoral or doctoral students. The appeal, existing already via the reputation of the CESEM and several groups of the SSA, may interest; physiologists of sensory-motor control, cognitive neuroscientists of motor planning, clinical neuroscientists, mathematicians, engineers, sport researchers, toxicologists.

The entity will be financially supported by the annual and recurrent funding of the academic partners (CNRS, University, SSA) but it will be necessary to get successful applications from other funding institutions (ANR, European Community, foundations ...).



### Assessment of the unit's interaction with the social, economic and cultural environment:

Different components of the entity have established, in the past, interactions in several fields.

At the economic and social levels, the CESEM has developed strong collaboration with Thales. In a first step, it was to use flight and driving simulators. Then, the CESEM and Thales imagined and realized a rugby scrum simulator. This simulator meets critical requirements to reduce accidents and also is a tool for coaching purposes and match preparation. One sees that it was a joint approach between research, industry and sport authorities (FFR, Fédération Française de Rugby).

Another research, with a social and cultural impact, concerns the overreaching (OR) detection in endurance trained athletes. The CESEM has analyzed this state (OR) in order to avoid that it switches toward an overtraining syndrome (OTS) which represents a threat for both athletic performances and health.

The IRBA plays a major role in the specification field of aeronautics and military equipment in partnership with industrial firms (Thales ...). Moreover, the IRBA via two of these departments, is widely involved in the relevance of the human factors (environmental constraints, overexposure, interactions with complex systems ...).

The IRBA may furnish some lines of progress in telemedicine via the programs it developed for the armed forces. Another contribution can be brought by the neurological department of the Val de Grâce Hospital in matter of taking care the patients suffering from brain irradiation sequelae.

### Assessment of the unit's organisation and life:

Eventhough this item is not applicable, it appears essential to insist on the necessity for the future director to set a robust synergy between the different searchers and their different thematics. It is clearly indicated in the chapter « organigramme fonctionnel et règlement intérieur », this will have to be respected to avoid dispersion and inefficacy.

### Assessment of the unit's involvement in training through research:

P.P. Vidal created a specialty on Neuroengineering in the Biomedical Engineering Master Program of Paristec-Paris Descartes. Besides, he organized, for a year, a panel for the Ministère de la Défense on Man Machine Interface. A proposition to create a Master in Biomedical Engineering exists with chinese Universities (Shanghai, Dentzi).

### Assessment of the five-year plan and strategy:

The strategy over the next five years includes two main ensembles (in humans and animal models) of particular projects which are globally in continuity with previous know-how and results displayed by the CESEM, the IRBA and Thales.

Sensors and actuators (and their combinations) are presently available. The major challenge will be to synchronize them to collect the data and to construct the databases for subsequent datamining. At this level, the role of the mathematicians of the CMLA will be crucial for: pre-processing, reduction and exploitation of the massive data flows.

Either in humans or in animal models data computing will deal with three major thematics: Health, Sport, and Defence.

In humans, the data will be collected from the High Maintenance Cohorts (HMC) composed with patients athletes and soldiers by the use of pervasive or ubiquitous computing.

Three main axes will be developed: (1) Decision processing and context dependent adaptation. The analysis, conducted in flying simulators, will try to unravel which cues are crucial and how they combine to evoke fast motor decisions and/or context specific adaptation (responses to fall or to sudden acceleration ...); (2) The perceptivo-motor style has been particularly studied by the CESEM. This approach, « the smart check project » should allow to define how different group develop proper strategies based on "weighing or reweighing" one or another of information (visual, vestibular, proprioceptive). This can be applied to patients: seniors at risk of fall, traumatic brain injured or stroke suffering patients or also to high level rugby players ... (3) Collaborative intelligence, this subproject concerns the use of sensors and actuators to quantify the anonymity of collective intelligence and motor planning. Two studies will be led: (a) a first on the trainer-trainee duo in flight simulators with a particular attention to autonomous and emotional responses during flight maneuvers; (b) another one using the robot to train the ruck in rugby. In this approach the collaborative sensorimotor behavior will be investigated.



In animal models, the studies will be centered to the post-lesional plasticity of the central and peripheral nervous systems. They will be a natural follow-up of HMC. They concern three axes widely developed by the CESEM and the SSA, they are classified according to three kinds of stress. (1). Chemical stress, function and dysfunctions of cholinesterases (AChE). This research consists to understand the mechanism of the toxicity of the organophosphates (OPs) and to strive to cure or to reduce their deleterious effects. A possible key to this issue can be provided by genetic analysis including mouse strains in which the putative targets (AChE and butyrylcholinesterase) are removed in a tissue specific manner. Such a "toxigenomic approach" appears relevant in a field where no curative therapeutic exists; (2) Mechanical stress: repair following facial nerve section. This subproject is really original. Using different types of lesion experiments, it is, in particular, proposed to study the role of certain molecules (ephrins and their receptors) in axonal guidance or of the lithium which stimulates the expression of myelin genes. (3) Brain irradiation, neuroprotectives agents. The SSA possesses a real leadership in this field with a strong potential of translational research in humans with patients suffering from brain irradiation. In this specific subproject it will be emphasized on the neuroinflammation induced by radiation and more precisely on the changes which occur at the level of the blood-brain-barrier (BBB). It will be screened neuroprotective agents dedicated to pericyte-endothelial cell normalization.

In total, the global project is coherent and partly relies upon solid scientific works previously carried out by the CESEM, the SSA and Thales. Its ultimate purpose is excellent and very innovative. The program is original, ambitious and multidisciplinary. This cooperative program responds to a strong need of building multimodal data banks in order to allow pertinent datamining. The latter stagnates in a desperate shortage or is weakly developed. The proposed database will be constructed via the follow-up of High Maintenance Cohorts (HMC) using soldiers, athletes and patients. This will permit to establish, in parallel to translational research using animal models, solid foundations for a real predictive and preventive medicine.



## 4 • Conduct of the visit

### Visit date:

Start: 23 January 2013, at 8:30 AM

End: 23 January 2013 at 06h30 PM

Visit site: COGNAC-G

Institution: Hôpital d'Instruction des Armées du Val-de-Grâce

Address: 74 boulevard de Port-Royal, 75005 Paris

### Conduct or programme of visit:

8h30 -9h00 Huis clos - Présentation de l'AERES au comité par le Délégué

9h00 -9h15 Devant l'unité, présentation du Comité de visite et Présentation de l'AERES par le Délégué

9h15-10h Présentation de l'unité, bilan et projet par M. Pierre Paul VIDAL.

#### AUDITION DES EQUIPES

10h00-10h20 Quantifying natural movements in behaving humans (S. COUVET)

10h20-10h40 Building databases and using decisional algorithms to study phenotypes (N. VAYATIS)

10h-40-11h00 CNS lesions following brain irradiation, how to check patients with severe cognitive and motor dysfunction? (D. RICARD)

11h00-11h15 Pause

11h15-11h35 CNS post lesional plasticity of the vestibular and facial system (C.DE WAELE)

11h35-11h55 CNS post lesional plasticity: the cholinergic system (E. KRECJI)

11h55-12h15 CNS post lesional plasticity, toward a stratified rehabilitation (A. YELNIK)

12h15-12h30 Sensorimotor adaptation to man-machine interface (S. BUFFAT)

12h30-14h Déjeuner

#### SESSION RENCONTRE AVEC LE PERSONNEL PERMANENT ET NON PERMANENT

Le comité se répartit en trois sous-groupes

14h -14h45 Rencontre avec les ITA titulaires, CDD

Auditoire : membres du Comité, représentant ITA, Délégué AERES, sans la Direction

Rencontre avec les doctorants et post-doctorants et/ou CDD « chercheurs », Ingénieurs

Auditoire : membres du Comité, Délégué AERES, sans la Direction

Rencontre avec les chercheurs et enseignants chercheurs titulaires

Auditoire : membres du Comité, Délégué AERES, sans la Direction

14h45-15h Pause

15h-15h45 Rencontre avec les représentants de la Tutelle:

Auditoire : membres du Comité, Délégué AERES

15h45-16h15 Rencontre avec la direction de l'unité

Auditoire : membres du Comité, Délégué AERES

16h30-18h30 Réunion du comité à huis clos

Présence : membres du Comité, délégué AERES



## 5 • Statistics by field: SVE on 10/06/2013

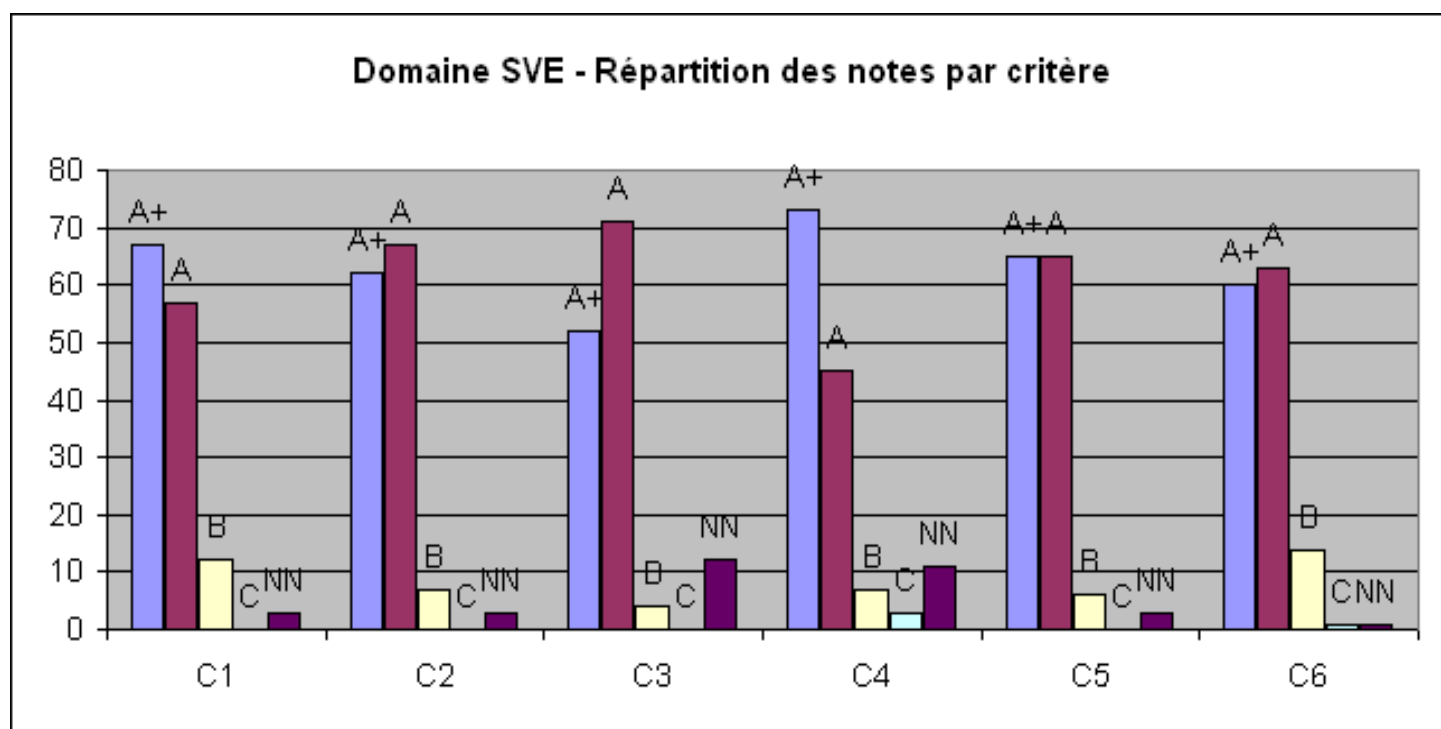
### Grades

Critères	C1 Qualité scientifique et production	C2 Rayonnement et attractivité académiques	C3 Relations avec l'environnement social, économique et culturel	C4 Organisation et vie de l'entité	C5 Implication dans la formation par la recherche	C6 Stratégie et projet à cinq ans
A+	67	62	52	73	65	60
A	57	67	71	45	65	63
B	12	7	4	7	6	14
C	0	0	0	3	0	1
Non Noté	3	3	12	11	3	1

### Percentages

Critères	C1 Qualité scientifique et production	C2 Rayonnement et attractivité académiques	C3 Relations avec l'environnement social, économique et culturel	C4 Organisation et vie de l'entité	C5 Implication dans la formation par la recherche	C6 Stratégie et projet à cinq ans
A+	48%	45%	37%	53%	47%	43%
A	41%	48%	51%	32%	47%	45%
B	9%	5%	3%	5%	4%	10%
C	0%	0%	0%	2%	0%	1%
Non Noté	2%	2%	9%	8%	2%	1%

### Histogram





## 6 • Supervising bodies' general comments

Vice Président du Conseil Scientifique

Paris le 18.04.2013

Vos ref : S2PUR140006297 –  
Cognac G - 0751721N

Monsieur Pierre GLAUDES  
Directeur de la section des unités de recherche  
Agence d'Évaluation de la Recherche et de  
l'Enseignement Supérieur  
20, rue Vivienne  
75002 PARIS

Monsieur le Directeur

Je vous adresse mes remerciements pour la qualité du rapport d'évaluation fourni à l'issue de la visite du comité d'expertise concernant l'unité « Cognition and Action Group : Cognac G »

Vous trouverez ci-joint les réponses du Directeur de l'unité, Pierre-Paul VIDAL. Le Président et moi-même considérons ce projet comme un des plus originaux, transversaux et prometteurs de l'ensemble de l'Université et le soutenons sans réserve.

Je vous prie d'agréer, Monsieur le Directeur, l'expression de ma considération distinguée.

Le Vice Président du Conseil Scientifique



Stefano Marullo, DM, DesSci



The members of the Cognac G project would like to thank the member of the visiting panel and its President for their encouragements and constructive remarks.

## **Major points**

*“There is some vagueness on how to address a number of critical issues concerning the necessary and sufficient parameters that capture the individual behavior.”*

The group has the necessary competences to address some issues concerning neurophysiology, ergonomics, clinics, engineering and mathematics necessary to record, databases and data mining individual behavior. It was unable to attract a skilled psychologist and ethologist, which is not surprising given the main orientations of Cognac G, which are more centered on the quantification of the physiological aspects of individual behavior. We have therefore asked two colleagues to advise us on these matters for the coming years, Martin Giurfa and Florian Waszak (who is next door). They have kindly accepted this task. This point was a real preoccupation during the genesis of the project but was insufficiently taken into account during the redaction of the project and at the time of the visit.

*“If multidisciplinary approaches are a real originality of this project they must not be sources of unwanted dispersion.”*

That is a real danger for the project. The way we intend to deal with that problem is to focus on very precise projects with stringent timetables. We also intend to create for each project a steering committee including not only the colleagues involved in the project but also external consultants (see above), which will meet to establish progress reports and recommendations. We are reasonably confident that it can be done because the group, at least for some part of it, has already worked on multidisciplinary projects in the last three years and ended up with a final product and/or a publication in due time. An emblematic example for us was the ruck simulator.

*“How research communities will handle data needs to be specified”*

Data definitely are the pivotal factor within the Cognac G initiative. For their collection, management and monitoring, several formal aspects need to be sorted out such as security, confidentiality, intellectual property. On these aspects, we will follow the recommendations from the relevant authorities (Institut Droit et Santé, CNIL, SGDSN, DCRI,) in order to comply with the legal framework. The data and their various representations (summaries, indicators, visual displays) will form the central vector of communication between the different communities. We aim to develop a secured collaborative framework connecting the databases through a web platform, which will render them accessible in a remote mode from the members of the team. The platform will make possible to upload/download data and metadata, aggregate data, operate statistical operations, and obtain visual displays, share data and observations. In order to design and implement this framework, we will rely on two things: (a) the experience of the Image Processing Online (IPOL <<http://www.ipol.im>>) initiative at CMLA/ENS Cachan which already offers similar services, (b) the first pilot projects within Cognac G will provide as an outcome procedures and specifications for the data handling part in the long run. Therefore the introduction of protocols, standards and formats for the data to be collected will be conducted through the interaction of data scientists and engineers with neurophysiologists and neurologists.

*A particular attention has to be planned to keep confidentiality of participants data (chiefly IRBA).*

This is indeed a challenge. Practically speaking we intend to compartmentalize the functioning of Cognac G at several levels. In term of collaboration we will have no cooperation with sensitive countries concerning the theme “Smart simulator “ and Smart Flat”. In addition, no citizens form sensitive countries will be authorized to work at the Val de grace and at these locations without specific authorization. Also, since the ARES panel visited us, I had extensive discussion with Mr. Nowak from the DCRI and Mr. Gasnot, in charge of the questions concerning defense at the CNRS to define a politic for the new UMR. Finally, a vice-director issued from the Service de Santé des Armées will be chosen by the SSA and he/she will be in charge of the questions concerning security.

*“The inconvenience to use separate buildings will have to be surmounted.”*

It is for sure a problem we will have to overcome but there was simply no way to install the researchers working o animal research on the Val de grace location, both in term of facilities and space. That’ said, the two locations are as close as some facilities on many large American campus and we have easy to use public transportation and parking places available at the two locations.

*“A calendar should be given on the temporal schedule of the different tasks”. Xavier*

Please see the table below for some of the project in human, which are the more prone to roadblocks. The studies in animal models pose fewer problems in term of methodologies And therefore should progress more smoothly.

	SPORT	DEFENSE	MEDICINE
SMART CHECK	<p>INSEP, AFLD</p> <p>Triathletes: Study of over-reaching</p> <p>One publication in 2013, Submission this year to a grant to pursue the project</p>		<p>AP-HP, HIA, ENS Cachan</p> <p>1. Perceptivo-motor style In stroke patients (F. Widal). The project continued in 2013, a publication is expected in 2014</p> <p>2. Gaze and postural control In vestibular patients (Pitié Salpêtrière).  The project continued in 2013, a publication is under review</p> <p>3. Motor control In neurological patients (Val de Grace, Dantzi University)  The project continued in 2013, a publication is expected in 2014</p>

SMART SIMULATOR	THALES, FFR  1. GPS 2. Scrum simulator for the XV de France  The project continued in 2013, a publication is expected in 2014	THALES, ENS Cachan  Couvette First test of the prototype of the multiple channels recorders done successfully, one more year of work to end with a final version	CESeM Iguanodon Frist test in 2013  Unversity of telecommunication (Bejing) Smart waiting room Frist test in 2013
SMART HABITAT			IRBA, THALES , HIA  Smart flat In progress at Percy for testing patients in rehabilitation Waiting for the result of the Tecsan ANR

*“Some precisions are necessary concerning the definitive group composition and the concise appartenance of part-time researchers and technicians belonging to the different structures*

This composition may not be definitive since some colleagues have asked to join the group.

*Staff members*

C. De Waele (CNRS) ENT-  
Neurophysiology  
M. Wolf Human factor (Paris Descartes)  
F. Baud (AP-HP) Anesth – intensivist  
X. Bigard (AFLD) Physiology  
S. Buffat (SSA-IRBA) Human Factor  
F. Dorandeu (SSA-IRBA) Toxicology  
R B. Plaud (AP-HP) Anesth – intensivist  
E. Krejci (CNRS) Neurobiology  
G. Lamas (AP-HP) ENT  
R. Molard (Paris Descartes) Human factor  
D. Ricard (SSA-HIA VdG) Neurol -  
Neurobiology  
P.P. Vidal (CNRS) Neurophysiology  
A. Yelnik (AP-HP) Neurorehabilitation

*Part-time members*

C. Hauswirth (INSEP)  
Y. Lemeur (INSEP)  
J.M. Morel (CMLA ENS Cachan) Imaging  
D. Racoceanu (IPAL) Applied mathematics  
N. Vayatis (CMLA-ENS Cachan) Applied  
mathematics  
S. Couvet (Thales)

*IATOS*

M. Nordey (T CNRS)  
M. Touvrety Loiodice (SSA-IRBA)  
J. Leroy (T CNRS)  
C. Magnani (IE CNRS)  
S. Adou (AGT Paris Descartes)  
P. Renouf (AGT Paris Descartes)  
J. William (AGT Paris Descartes)  
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*PhD students and Post-doctoral fellows*

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L. Oudre