



**Secrétariat d'État à l'Enseignement  
supérieur et à la Recherche**

**Ministère de l'Économie,  
de l'Industrie et du Numérique**

# **Reforms in the French Industrial Ecosystem**

## **Rapport à**

Monsieur le Secrétaire d'Etat à l'Enseignement Supérieur et à la Recherche  
Monsieur le Ministre de l'Economie, de l'Industrie et du Numérique

## **Etabli par**

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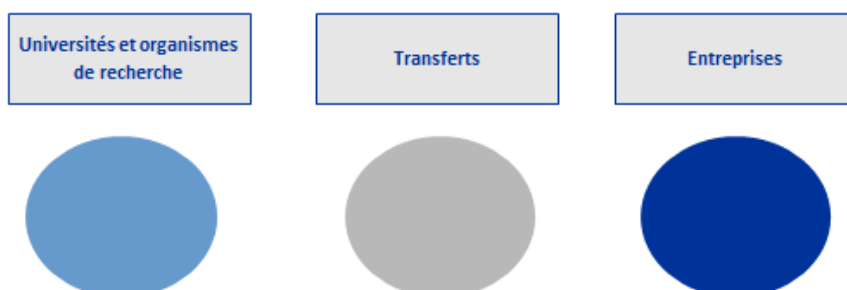
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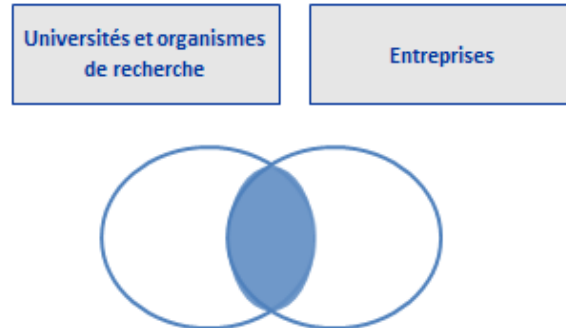
Alain Juppé and Michel Rocard introducing their report, *Investir pour l'avenir* (2009), start with a question that has long troubled the French: “Pourquoi sommes-nous si bons dans la recherche et si faibles dans sa valorisation?” France ranks sixth or seventh in the world for its research (as measured by scientific publications and citations) but between sixteenth and twentieth for its innovation.<sup>1</sup> In the European Commission’s “Innovation Union Scoreboard, France figures as an “innovation follower” not a leader.<sup>2</sup> Why this is the case and what should be done to fix it remain controversial and unsettled matters. To explain why France has brilliant scientists and engineers and great discoveries but remains slow and inefficient in producing new goods and services in the market, many point to the universities and research centers. Researchers are seen as interested only in publications. The institutions that employ them are seen as failing to provide incentives for scientists to address the needs of the economy and as incompetent when they do, finally, under pressure, attempt to commercialize academic discoveries.

The key questions of my mission (lettre de mission du 2 décembre 2015, Annex 1) with respect to these issues are: How does academic education and research translate into a dynamic economy producing new goods and services in the market, new enterprises, and new good jobs? Do the new French institutions created over the past decade (SATTs, IRT/ITEs, Instituts Carnot, France Brevet, pôles de compétitivité, PRTT CEA-Tech) in fact perform the functions for economic growth that universities and research centers perform in other countries? Does the evidence of the early years suggest that these new institutions will eventually serve as the missing links enabling new research to flow rapidly into the economy? Even if these new agencies are the right ones, is the system now too overcrowded and complex to work efficiently? How might this system be simplified and made more responsive to the challenges of competition in world markets and strengthening of societal well-being in France? To resolve these questions I have spent three weeks in France and have interviewed 111 people in Paris, Grenoble, Lyon, and Nantes.

The innovation reform agenda of both Conservative and Socialist governments of the past fifteen years has focused on fixing what are perceived as the failures of the academic community to build connections to industry that would transform the new knowledge of the laboratories into new products and services in the market. These efforts have mainly focused on creating institutions to fill gaps between public research and industry. If we imagine research, transfer, and firms as three distinct entities, then the reforms have mainly focused on building up “Transfer.”



To anticipate my findings after three weeks of research and 111 interviews, I conclude that reform ought to be focused instead on creating a broader, thicker interface between research and enterprises. This would require major new efforts and funding in universities.



## TWO MISUNDERSTANDINGS

### 1. What Universities Can (and Cannot) Do for the Economy

Several recent reports attempt to demonstrate the economic impact of academic research. A 2015 study of the economic impact of the twenty-one League of European Research Universities (including Pierre and Marie Curie University, University Paris-Sud, and University of Strasbourg) calculates an output of 21.9 billion euros in Gross Value Added.<sup>3</sup> An MIT December 2015 report focuses on the role of graduates in the economy.<sup>4</sup> Alumni surveys found that 22 percent of all MIT graduates had worked in early-stage ventures. MIT alumni were among the founders of some 30,000 currently active companies employing 4.6 million people, generating revenues of \$1.9 trillion, equal to the GDP of the world's tenth-largest economy in 2014. The report attributes the entrepreneurial performance of the alumni to the multiple and diverse educational opportunities and resources provided for undergraduate and graduate students as well as for faculty for interaction with industry through hands-on experience in internships in domestic and foreign laboratories and companies, entrepreneurship classes and labs, mentoring programs for students and faculty with ideas for start-ups, and easy access to a strong technology licensing office and industrial liaison offices. The strongest positive conclusion to be drawn from such studies is that what matters is the breadth, depth, and continuity of interactions across a broad front between industry and academic researchers from multiple disciplines. It is sustained exchange across a wide interface that translates into economic impact.<sup>5</sup>

University efforts at “valorization,” “maturation,” and commercialization of research are only one part and likely not the most important node along this interface. The measure of success of those universities that are in closest and most productive relationship to the strong regional economies around them—University of Cambridge, Stanford University and Silicon Valley, MIT, Harvard and the Kendall Square biotech industry—is not the income they derive from technology transfers. In fact, even leading American universities derive relatively little income from their licensing of the results of fundamental research. Harvard University has earned less than \$13 million a year on licensing intellectual property in recent times.<sup>6</sup> To take one familiar case: the MIT Technology Licensing Office (TLO) is regarded as one of the most productive in the U.S. and turns out about 600 new invention disclosures a year, about 300 new patents, about 15-30 new companies a year and manages over 650 active licenses.



But the amount of income that flows to the university after distributions to the labs and inventors is not a major factor in the university's annual budget, and the revenues fluctuate significantly from year to year. As the director of the MIT Technology Licensing Office explained: "The university cannot expect that financial returns will ever be a major source of income---unless they get lucky."<sup>7</sup> A survey of 194 leading universities and research hospitals found that the total licensing revenues these universities had received in 2012 was \$2.6 billion. The research base that generated these returns was \$63.7 billion—so licensing revenue was equal to only 4.1% of research expenditures and after distributions to the academic inventors only about 3%. Fifty percent of the licensing revenue went to only twelve of the academic institutions, and for each of those twelve, more than 80 percent of their royalties came from one blockbuster. Only 16% of university licensing offices are self-financing.<sup>8</sup> Yet French policymaking on innovation continues to focus on creating institutions that focus on patents, licenses, and revenues and on speed to market over shorter time intervals (10 years) than any foreign evidence validates as plausible.

The key lesson that emerges from this rapid survey of foreign "best practice" in academic research and industry is that building a dense set of connections along the interface between researchers and industry is what matters most. The essential exchanges are those between human beings: students excited about entrepreneurship graduating from universities and going to work in start ups and companies, engineering students sent on internships to a German or Chinese or French company for several months, researchers from industry standing around a coffee machine in a lab talking with their university counterparts, scientists from research centers spending a few years in government policymaking positions, a university patent expert counseling the chemist with a great new idea on batteries, the chemist serving as a consultant to the start up that was initiated with a license from her discovery, the university industrial liaison officer walking a company's R&D director on an introductory round to visit labs. Licensing and maturation of research are valuable for the economy when woven into this web of productive connections—even if often they are only moderately remunerative for the individual university.

## **2. A Fraunhofer à la française ?**

The remarkable record of German Mittelstand companies in high value-added production, exports, employment, has focused attention on the institutions that support these firms. The best known are the Fraunhofer institutes. But research on Germany shows that the Fraunhofers are only one part of an ecosystem that is very rich in public and private resources that companies can combine with their own capabilities. The Fraunhofer could hardly achieve its results were it not operating in an environment with trade associations, industrial collective research consortia, industrial research centers and associations, technical advisory committees, technical universities, and much else. Every advocate for a new transfer agency in France sees his or her institution as a "Fraunhofer à la française" in the making. But neither the Instituts Carnot nor the IRT nor PRTT CEA-Tech can produce comparable results without major improvements in the ecosystem.

## **THREE POINTS OF CONSENSUS**

The interviews showed that even among people with very divided opinions on the new research agencies, universities, and the mutual responsibilities of the State and of companies for the poor performance of the economy, almost everyone could agree on three points. First,



virtually everyone supported the shift from targeted subventions of programs to Crédit Impôt Recherche (CIR). Without CIR, said the industrialists, they would move more or all of the R&D out of France. Secondly, everyone stated that the complexity of the innovation system (Annex 2) was a major barrier to its success. New institutions have been piled on to old ones; overlapping jurisdictions lead to turf battles; rules seem to be in constant flux. Third, even the most determined critics of the new transfer institutions had one message: “ne changez rien; ne touchez à rien !”

## PERFORMANCE OF THE NEW INSTITUTIONS

There have been very many evaluations of the transfer agencies over the past three years.<sup>9</sup> The minimal conclusions that one can take from this vast literature are, first, that there have been no stunning successes; secondly, that those institutions that are perceived to have worked the best are those built on and with pre-existing institutions and networks. For example, the widely well-regarded Alsatian SATT, Conectus, is basically a re-baptized version of the university’s licensing and industrial liaison office that had been built by Alain Beretz, the University of Strasbourg president, who had hired Nicolas Carboni as director of the university’s licensing bureau (SAIC) which was subsequently absorbed into the SATT. Finally, optimism about these institutions requires that they accomplish far more in the future than they have to date.

Across the 111 persons interviewed, many of the comments on the SATT and IRT were harsh. Even those directly involved in the SATTs agreed that the explicit objective of profitability within ten years was a mistake. The only way it could be achieved would be with short-term strategies on patents and selling services that would basically undermine the long-term objectives of the institution. In a few cases, university presidents regard the SATT which now has a monopoly on the commercialization of the university’s intellectual property as a kind of “filiale” of the university. One of the presidents wondered if the SATTs would turn out to focus on selling services or would somehow lead to more fruitful ties with industry. But the more general sentiment is of a kind of dispossession. As one person said: “La SATT déresponsabilise les universités. Le fruit de la recherche est confié à des financiers avec des objectifs financiers. C’est suicidaire.” A top manager from one of France’s largest multinationals: “Je n’ai pas vu la différence entre une SATT et les bureaux de valorisation du réseau Curie. Ils ont plein d’idées, plein d’argent, mais je n’en ai pas vu les bénéfices pour le moment.”

Comments on the IRT were equally mixed. The most positive came from industrialists. One of the R&D directors from a large French multinational said that in the ITE in which he participates, there’s a concentration of talent beyond anything they could muster in-house. Working in the IRT with its advanced equipment, another said, is like working sur échelle et en temps réel. The CEO of a PME said IRTs are great for any project in which you are not sure who your customer will be, but keep it in house when you know to whom you can sell it. But most observations were negative. They centered around unfair competition (“du Colbertisme—on a créé des fonds publics pour faire des concurrents”). And from universities and research centers, protests about IRT’s efforts to poach researchers from laboratories.

Rather than tallying up positive and negative views of these institutions, it would be more productive to match up institutions with public objectives and to recognize that these fall along different time lines. Today in a situation of high unemployment and very slow

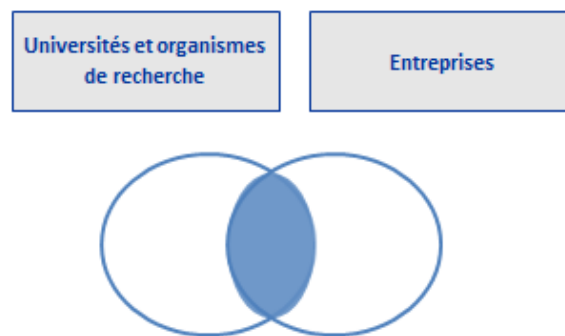


economic growth, public policymakers need to consider which institutions can make contributions with effects that would be felt in the short term, i.e., the next year or two. At the same time policymakers must invest in France's future, as the Juppé-Rocard report urges, with investments in institutions whose societal benefits that may well not be realized for another decade or two.

For the short-term contributions to the economy, the most valuable of the projects that were observed in the mission were ones launched by the PRTT CEA Tech. I visited those in Pays du Loire. At the start of CEA Tech's entry into the region in March 2013, CEA personnel identified a pool of companies for whom CEA generic technologies ("les briques") might have value. The industrialists described the rapid and positive response of the CEA Tech, its willingness to work to hard near-term deadlines. What emerged from the meetings with the CEA staff and with the industrialists was the great capacity of the CEA Tech to identify enterprises who could use their technologies; its ability to understand the technical problem of the firm; and its ability to match up the firm's need and the generic technology ("la brique") at CEA Tech; and finally, to customize the technology to the firm's requirements. The CEA Tech seemed to be remarkably good at identifying firms they could work with, understanding their need, and coming in with a solution that was of acceptable cost on a short timetable of about a year to 18 months. What was absent from these stories, however, was any indication that the firms had acquired new competences in the course of the work with CEA-Tech. They had acquired "briques" that would allow them to bring new products and services to market. There's a need for such short-term solutions, but also for investing in institutions that over the long term will preserve and augment French competitiveness and place France on the far frontier of technological advance.

## RECOMMENDATIONS

The picture that emerges from the interviews is of a great diversity in the ways in which new institutions have evolved across different regions and across different industrial ecosystems. This diversity has been accidental not intentional. For the next phase of strengthening relations between research and the economy, public policies should deliberately conceive a program of experimentation. The experiments should focus above all on broadening and deepening the range of interactions along the interface between research and industry. These experiments should be evaluated at stated intervals with funding contingent on measurable achievement. Where examples of collaboration and strong networks exist today as, for example in les grandes écoles or in strong regional collaborations between research and industry, they may suggest yet further models for experimentation. The central idea is to acknowledge that the critical zone for improvement lies at the intersection of research and the economy and that no one model will work across all territories and sectors of the economy.



1. Identify 3-5 universities of excellence (IDEX) willing to integrate into their governance structures a broad range of activities along the interface. These would include functions currently held by the SATT and would add and/or strengthen many others: eg., real welcome and a “GPS” for industrialists to the laboratories, simplification of the formalities for contracts de recherche; internships for students (comparable to those in the grandes écoles), CIFREs for masters candidates as well as doctoral candidates, physical space and equipment for student-initiated maker spaces, fab labs; classes on entrepreneurship, competitions for new technologies and start-ups, mentoring services for students and faculty with ideas for startups, plans for building strong relationships with alumni. Many of these already exist—but at levels of activity too low to be productive.
2. For universities and research centers: the objective of transfer is to diffuse the results of research into economy and society, not to reimburse the costs of research or of transfer
3. Today the IRTs/ITEs stand apart from the public research institutions with consequent difficulties in attracting researchers from these institutions and in building strong networks. Experiment with integrating 1-3 of them into "lab coms nouvelles formules" that would situate the IRT/ITE in public laboratories with funding both from companies and the State..





4. Distinguish the relevant time horizons for each of the transfer agencies. PRTT CEA Tech has solutions that can serve companies within a one to two year timeframe. Research in university laboratories usually takes about 15 years to bring to market. The short term projects may be essential in today's economy for jobs and growth. The long term projects are essential for France's future.
5. In universities and research centers, bring researchers into contact with eventual customers for products and services—not only into contact with industrial R&D.
6. Simplification of the *cartographie* of today's innovation system: clarify rules about eligibility when private industry works with public research; eliminate redundant functions. Eg., should commercialization of brevets and licenses be held within SATTs or France Brevet? Clarify the mission of France Brevet.
7. Simplification: the grands organismes de recherche need to take the initiative on a plan for a single tutelle per laboratory.
8. Focus the transfer agencies on transfers to growing young firms as well as to start ups. Recent research shows that durable job creation takes place in young firms not in start ups.
9. Focus the transfer system on customers not on technologies

Suzanne Berger



<sup>1</sup> Source: Tableau de bord de l'Union de l'innovation, 2015. Presentation Alain Schmitt, DGE, 16 Novembre 2015. See also Coordination interministérielle de l'Innovation, *L'innovation en France. Indicateurs de positionnement international*. Edition 2015 (Novembre 2015).

<sup>2</sup> OECD Reviews of Innovation Policy: France. (2014)

<sup>3</sup> BiGGAR Economics, *Economic Contribution of the LERU Universities: A Report to LERU*. August 2015.

<sup>4</sup> Edward B. Roberts, Fiona Murray, and J. Daniel Kim, *Entrepreneurship and Innovation at MIT*, MIT Innovation Initiative, December 2015. For Stanford, see Charles Eesley and William Miller, "Impact: Stanford University's Economic Impact via Innovation and Entrepreneurship." Stanford University: Stanford, CA; 2012.

<sup>5</sup> See also University of Cambridge research by Alan Hughes and Michael Kitson (2012) "Pathways to Impact and the Strategic Role of Universities: New Evidence on the Breadth and Depth of University Knowledge Exchange in the UK and the Factors Constraining its Development." *Cambridge Journal of Economics*, vol. 36, no. 3, pp. 723-750.

<sup>6</sup> Rebecca Robbins, "Money. Why isn't Harvard getting rich off its scientific research?" in STAT, <http://www.statnews.com/2015/12/21>

<sup>7</sup> Powerpoint presentation by Lita Nelsen, Director, MIT Technology Licensing Office, November 2015, ISTA, Nanjing.

<sup>8</sup> Walter Valdiva, *University Start-Ups: Critical for Improving Technology Transfer* (Washington, D.C.: Brookings Institution/Center for Technology Innovation at Brookings, 2013).

<sup>9</sup> CGE, Audit de la situation financière de l'IRT SYSTEMX, 2014 ; IGAENR, Evaluation de l'expérimentation des plateformes régionales de transfert technologique de CEA Tech, pour le MENESR et le MEIN, 2015 ; IGAENR, Evaluation des incubateurs publics, pour le MENESR, 2014 ; IGAER, CGE, Les relations entre les entreprises et la recherche publique : lever des obstacles à l'innovation en France, 2015 ; IGF, CGEDD, CGE Revue de dépenses sur les aides à l'innovation, 2015 ; Commission Nationale d'Evaluation des Politiques d'Innovation de France Stratégie, Les politiques d'innovation depuis 2000 : Une cartographie (document de travail), 2016 ; Cour des comptes, Le programme d'investissements d'avenir, Une démarche exceptionnelle, des dérives à corriger, 2015 ; Mission d'évaluation et de contrôle de la Commission des finances de l'économie générale et du contrôle budgétaire, Conclusion des travaux de la Mission d'évaluation et de contrôle sur la gestion des programmes d'investissements d'avenir relevant de la mission Recherche et enseignement supérieur, 2015 ; Commission Carnot 3, Recommandations sur l'évolution des modalités de fonctionnement du dispositif Carnot, pour le MESR et le MEIN, 2014 ; Rapport Beylat J.L., P. Tambourin, L'innovation : un enjeu majeur pour la France, 2013 ; ANR, Inno TSD, 2015, Evaluation de l'IRT Bcom ; ANR, Inno TSD, 2015, Evaluation de l'IRT Bioaster ; ANR, Inno TSD, 2015, Evaluation de l'IRT Jules Verne ; ANR, Inno TSD, 2015, Evaluation de l'IRT Nanoelec ; ANR, Technopolis, 2012, Enquête sur le devenir professionnel des docteurs ayant bénéficié du dispositif Cifre l'année 2000 ; ANR, Technopolis, 2014, Evaluation de la SATT idfinnov ; ANR, Technopolis, 2014, Evaluation de la SATT Lutec ; ANR, Technopolis, 2014, Evaluation de la SATT Toulouse Tech Transfert ; ANR, Technopolis, 2014, Evaluation de la SATT Sud-est ; ANR, Technopolis, 2014, Evaluation de la SATT Conectus ; ANR, Technopolis, 2015, Evaluation de la SATT Aquitaine Science Transfert ; ANR, Technopolis, 2015, Evaluation de la SATT AxLR ; ANR, Technopolis, 2015, Evaluation de la SATT Ouest Valorisation ; ANR, Technopolis, 2015, Evaluation de la SATT Nord ; Erdyn, BearingPoint et Technopolis, 2012, Etude portant sur l'évaluation des pôles de compétitivité ; Kurt Salmon, Évaluation du positionnement stratégique de France Brevets, 2015 ; Bellégo, C. et Dortet-Bernadet, V., 2013, La participation aux pôles de compétitivité, quelle incidence sur les dépenses de R&D et l'activité des PME et ETI ? Document de travail de l'INSEE ; Bellégo, C. et Dortet-Bernadet, V., 2014, L'impact de la participation aux pôles de compétitivité sur les PME et ETI ? Economie et Statistique n°471, INSEE ; Bellégo, C., 2013, Les pôles de compétitivité et les projets financés par le FUI ont accru les dépenses de R&D, l'emploi et l'activité, sans effet d'aubaine, 4 pages DGCIS ; Fontagné, L.; Koenig, P.; Mayneris, F. et Poncet, S., 2012, Cluster policies and firm selection: Evidence from France, document de travail, Université de Louvain ; Hallépée, S. et Houlou Garcia A., 2012, Evaluation du dispositif JEL, direction générale de la compétitivité de l'industrie et des services ; Lhuillery, S. ; Marino, M. et Parrotta, P., 2013, Evaluation de l'impact des aides directes et indirectes à la R&D en France, rapport pour le MESR ; Masquin, B. et Huber, D., 2012, Le financement de l'innovation par Oséo, Trésor-Eco, Direction générale du Trésor ; MENESR, 2014, Développement et impact du crédit d'impôt recherche : 1983-2011, avril, 84p ; OCDE, 2014, Examen de l'OCDE des politiques d'innovation en France. ; OSEO et AFIC, 2012, Performance des entreprises innovantes investies par les FCPI.



# ANNEXES

## ANNEXE 1 : Lettre de mission



*Le Ministre de l'Économie, de l'Industrie et du Numérique*      *Le Secrétaire d'État à l'Enseignement supérieur et à la Recherche*

Paris, le      02 DEC. 2015

Chère Madame la Professeur Suzanne Berger,

Face à l'accélération des évolutions de notre monde et à la circulation de plus en plus ouverte et rapide des savoirs, des idées et des moyens, la capacité d'une nation à encourager sur son territoire l'émergence et la valorisation d'innovations, constitue un enjeu crucial pour l'avenir de son économie et de ses emplois.

L'innovation est l'une des clés de la compétitivité hors coût de notre industrie, qui lui permettra de se développer dans un contexte de concurrence internationale tout en préservant notre modèle social.

Le rapport rédigé par MM. Beylat et Tambourin en 2013 souligne la diversité des domaines qui concourent au processus d'innovation et identifie plusieurs axes d'amélioration du système français : développer la culture de l'innovation et de l'entrepreneuriat, accroître l'impact économique de la recherche par le transfert et accompagner la croissance des entreprises innovantes. Il insiste sur la nécessité de se doter d'une politique globale en faveur de l'innovation, qui accorde une place importante à l'évaluation de l'impact économique des mesures. L'organisation sous l'égide de France Stratégie de la Commission nationale d'évaluation des politiques d'innovation répond à cette exigence.

Au-delà de cette évaluation quantitative, il reste encore à réfléchir sur les mesures à prendre pour rendre plus cohérent et lisible l'ensemble des structures nouvelles que les Gouvernements successifs ont mis en œuvre depuis une dizaine d'années. Selon de nombreux acteurs économiques et des ratings internationaux, la diversité et la superposition des dispositifs et organismes mis en place en France pour stimuler et accompagner le transfert de technologie vers les entreprises, tant à l'échelle nationale que régionale, ont créés des complexités qui rendent moins productif et efficient l'écosystème industriel français et pénalisent les laboratoires de recherche sans juste retour pour les innovations qui y ont vu le jour.

Madame Suzanne BERGER  
28 rue Vauquelin  
75005 PARIS

.../...

Pour accélérer les transferts de connaissances à partir de la recherche publique et pour renforcer le rôle de l'Université au cœur de ce dispositif, le Gouvernement souhaite prendre des mesures de simplification et de rationalisation de l'ensemble du système de l'innovation.

Compte tenu de votre connaissance des enjeux de l'innovation et de la mondialisation, de votre connaissance de différents systèmes nationaux mais aussi de votre capacité à apprécier les origines et particularismes du système français, nous souhaitons vous confier l'élaboration de propositions sur ces questions.

Vos propositions pourront être appréciées sous plusieurs angles : articulation des niveaux d'intervention (national et territorial), cohérence entre approches transversale et sectorielle, couverture de l'ensemble de la chaîne de l'innovation. Votre rapport pourra porter à la fois sur des évolutions structurelles s'inscrivant dans la durée, sur l'éclairage de « bonnes pratiques d'innovation » dans le cadre d'écosystèmes industriels, et sur des axes de clarification ou de rationalisation des politiques publiques pouvant être mis en œuvre à plus court terme.

Vous pourrez vous appuyer sur les travaux récents décrivant notre système de recherche et d'innovation (rapports officiels, études d'évaluation, indicateurs...) et sur des interviews sur des territoires qui vous sembleront pertinents.

Monsieur Jacques Aschenbroich, administrateur et Directeur général de VALEO, apportera son expérience et sa connaissance du système d'innovation industrielle tout au long de la mission sous la forme de points d'étape réguliers avec Madame la Professeure Suzanne Berger. Vous formulerez conjointement des propositions.

Nos services vous apporteront leur concours pour vous donner accès aux données et analyses pertinentes. Ils pourront vous aider à identifier les acteurs et experts que vous souhaitez rencontrer. Vous pourrez aussi envisager avec France Stratégie la meilleure façon d'interagir avec la Commission nationale d'évaluation des politiques d'innovation, dont le commissaire Jean Pisani-Ferry assure la présidence.

Nous souhaitons disposer de votre rapport pour janvier 2016.

Vous remerciant d'avoir accepté cette mission, nous vous prions d'agréer, chère Madame, l'expression de nos reconnaissantes salutations.



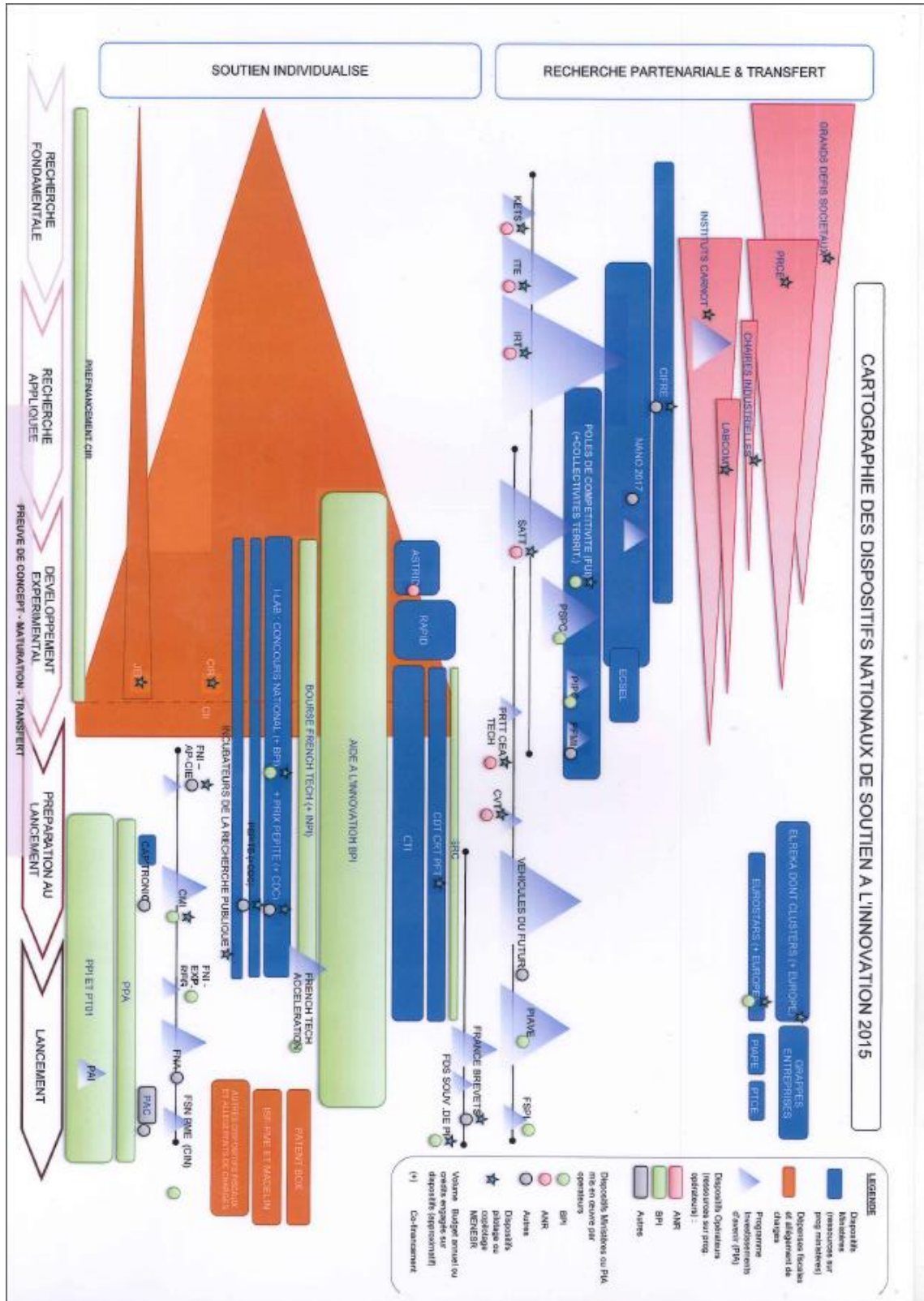
Emmanuel MACRON



Thierry MANDON

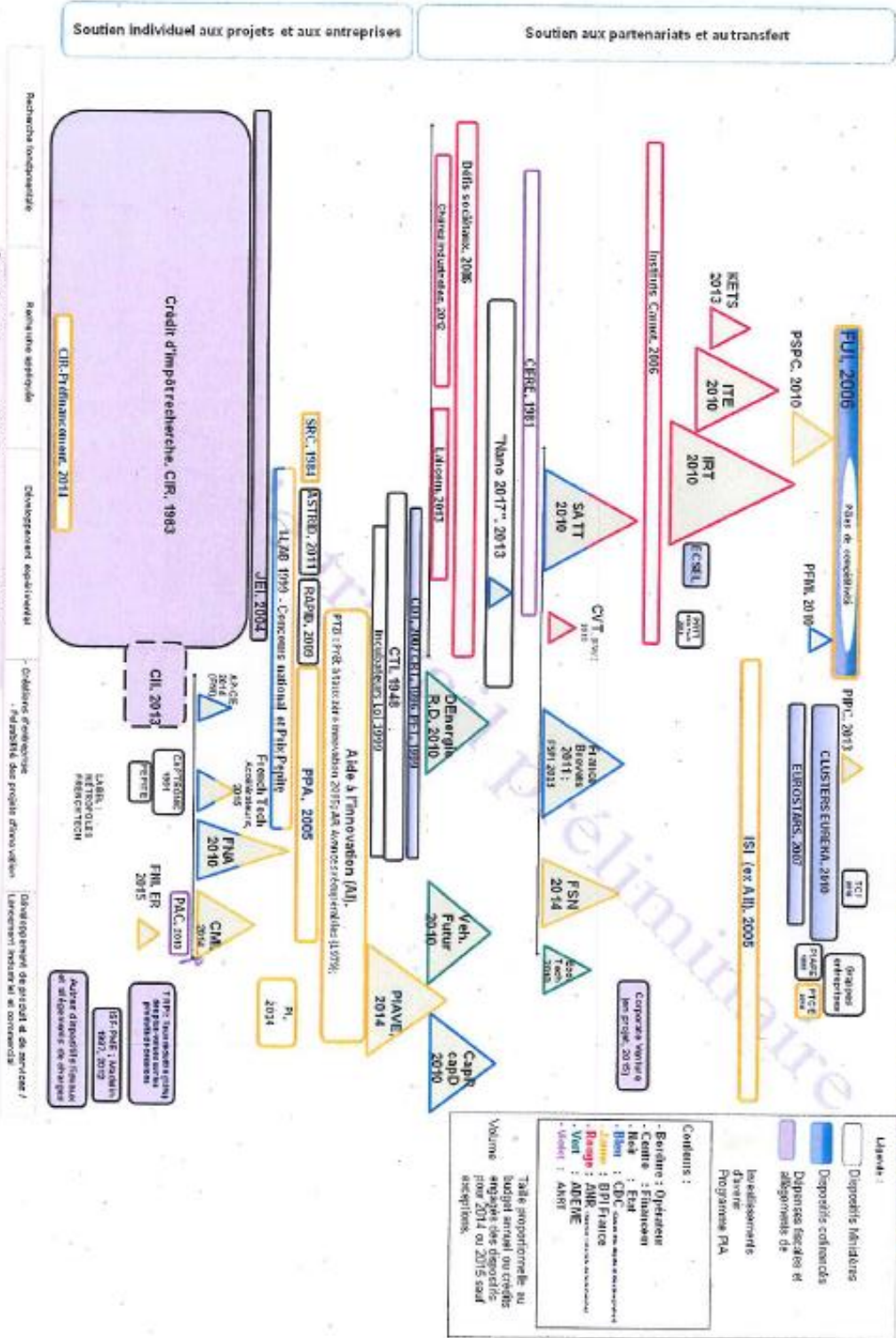
## ANNEXE 2 : Cartographies des dispositifs de soutien à l'innovation

### Carte 1 : Secrétariat d'Etat à l'Enseignement Supérieur et à la Recherche

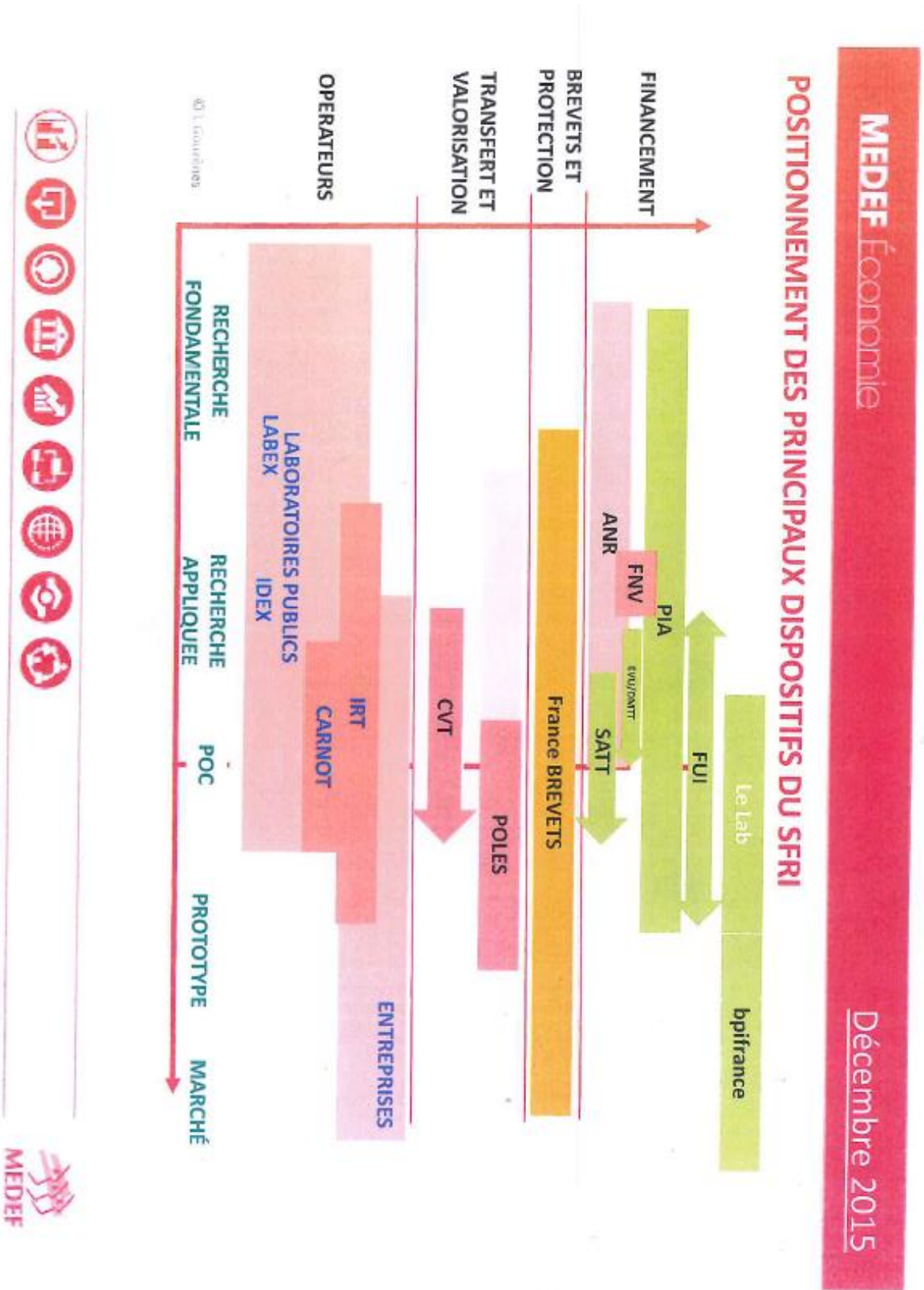


Carte 2 : France Stratégie

Sources : CNEPI (Enquête 2015), sources ministérielles MESR-DGRI-SITTAR ; MEN-DGE et Bpifrance. (1) Voir tableau 2 pour le détail des sigles.

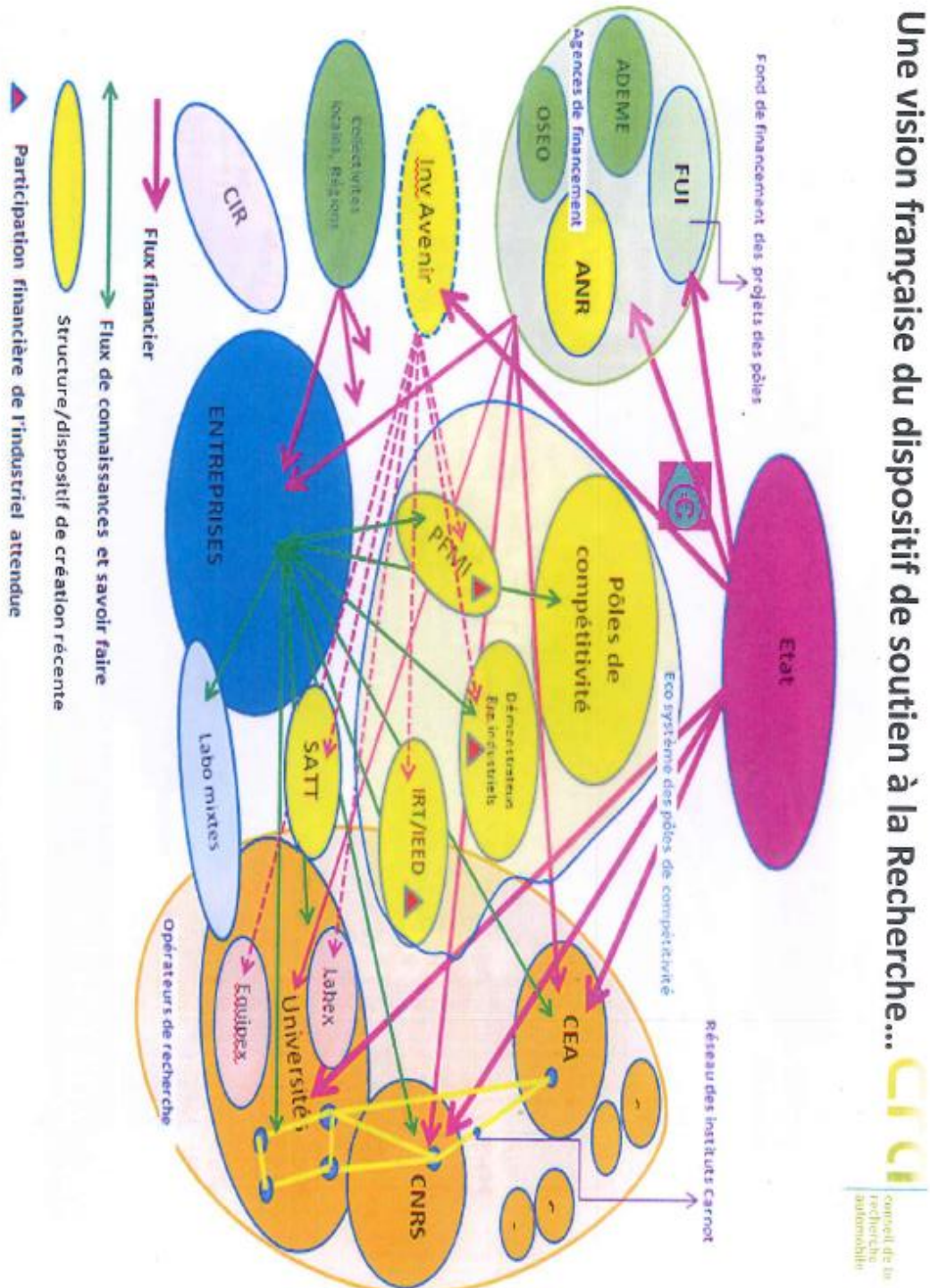


Carte 3 : Medef





Carte 4 : Conseil de la recherche automobile







### **ANNEXE 3 : Liste des personnes consultées**

#### **Ministère de l'Éducation nationale, de l'Enseignement Supérieur et de la recherche**

##### **Cabinet de Thierry Mandon**

GRAVIÈRE - TROADEC Isabelle

HUOT Gérard

MONTHUBERT Bertrand

STRASSEL Christophe

##### **Direction Générale de la Recherche et de l'Innovation**

GENET Roger

JAMET François

LOMBES Thomas

SACHWALD Frédérique

VALLA Pierre

#### **Ministère de l'Économie, de l'Industrie et du Numérique**

##### **Cabinet d'Emmanuel Macron**

LIRZIN Franck

PRUNIER Guillaume

##### **Direction Générale des Entreprises**

MENETRIER Laure

SCHMITT Alain

##### **Académiques**

ALLESSANDRINI Bertrand – Ecole Centrale Nantes

BERETZ Alain – Université de Strasbourg

CASTOLDI Nicolas – CNRS

CHAMBAZ Jean – Université Pierre et Marie Curie

COHEN Elie – CNRS

DAVID Clarisse – CNRS

FUCHS Alain – CNRS

HOULLER François – INRA

LABOUX Oliver – Université de Nantes

LAREDO Philippe – IFRIS, Université de Manchester

LEVY Yves – INSERM

LEVY Patrick – Université Joseph Fourier

MARTIN Jean Louis – Supoptique

MUSSELIN Christine – Sciences Po Paris

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POITOU Arnaud – Ecole Centrale Nantes

SOUBEYRAN Romain – Ecole des Mines

##### **BPI**

REINHART Laure



## **CEA**

FIONI Gabriele – CEA  
GUESNE Matthieu – CEA Tech  
GEGOUT Christophe – CEA Investissement Amorçage Technologique  
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## **CGI**

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## **Entreprises**

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ALLARD Odile – Fluoptics  
ASCHEBROICH Jacques – Valeo  
AUFRERE Jacques – Faurecia  
De BANTEL Hugues – Cosmo  
BEDIN Frédéric – Groupe Hopscotch  
BEN YOUSSEF Walid – Compagnie européenne d'intelligence stratégique  
BONNIFET Fabrice – Bouygues  
BOUQUOT Geoffrey – Valeo  
de BUCHET Amaury – UlyssCo  
CAZAUBIEL Murielle – Biofortis  
CHEPPE Patrick – Europe Technologie  
CITROEN Philippe – Compagnie européenne d'intelligence stratégique  
COLLET Patrick – Tronico  
COLOMBANI Pascal – Valeo  
DALBIES Eric – Safran  
DEVAUCHELLE Guillaume – Valeo  
DORSCHNER Sylvain – Innoeco  
FAOUCHER Erwan – Valeo  
FRANTZ Jérôme – Frantz Electrolyse  
GOUZENES Laurent – Pacte Novation / Medef  
GRIMAUX Franck – Valneva  
JACQUIN Erwan – Hydrocean  
JOBERT Timothée – ISKN  
JENNY Christophe – SMTc  
KLEIN Stéphane – STX  
KOTT Laurent – IT Translation  
LANDRAIN Thomas – La Paillasse  
LECANTE Christophe – TKM, Comité Richelieu  
LETERTRE Fabrice – Exagan  
LIGNON Gérard – Airbus  
de LUMLEY Thierry – Cosmo  
MARION François – Valeo  
MINSTER Jean –François – Total  
ORANCE Nicolas – Daher



POULARD Fabien – Dictanova  
RAINFRAY Lionel – Groupe Arthur  
RODIER Frédéric – Mitis  
ROIRAND Vincent – Mazedia  
ROULAND Jérôme – Vaillant Group  
SANCHEZ Frédéric – Fives  
SOUPARIS Hugues – Sury's  
SPORTISSE Bruno – Thuasne  
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TIBI Philippe – Pergamon Campus  
VERON François – Newfund  
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### **Institutionnels**

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#### **ANNEXE 4 : Bibliographie**

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