

Projet ANR- 13-BS02-0009-01

**ALFFA – African Languages in the Field,
Speech Fundamentals and Automation**

Programme SIMI2 2013

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A IDENTIFICATION

Acronyme du projet	ALFFA
Titre du projet	A frican Languages in the F ield: speech F undamentals and A utomation
Coordinateur du projet (société/organisme)	Laurent Besacier – Université Joseph Fourier (Grenoble 1) - LIG
Date de début du projet	1/10/2013
Date de fin du projet	30/9/2017
Labels et correspondants des pôles de compétitivité (pôle, nom et courriel du corresp.)	Images & Réseaux
Site web du projet, le cas échéant	http://alffa.imag.fr

Rédacteur de ce rapport	
Civilité, prénom, nom	M. Laurent Besacier
Téléphone	0457421454
Courriel	Laurent.besacier@imag.fr
Date de rédaction	Novembre 2017

B LIVRABLES ET JALONS

Quand le projet en comporte, reproduire ici le tableau des jalons et livrables fourni au début du projet. Mentionner l'ensemble des livrables, y compris les éventuels livrables abandonnés, et ceux non prévus dans la liste initiale.

The paragraph below describes the exact status of what was done for each deliverable planned at the beginning of the project.

Task 2.1 : Linguistic Description of the Targeted Languages (DDL)

4 reports have been delivered for **Swahili, Wolof, Hausa and Pulaar** - Deliverables are available on the intranet of the project <http://alffa.imag.fr/deliverables/> (login/pass => anr/@nr2013ANRù)

Task 2.2 : Ecological Aspects of the Targeted Languages (DDL)

This work has been done for Wolof only : speech data in several dialects (urban wolof, faana-faana) has been collected and was analyzed. The machine-assisted analysis of a subset of this data is available on : <https://arxiv.org/abs/1706.00465>

Task 3.1 : Data Collection methodology (LIG&VOX)

A paper, describing this methodology (and its application to Wolof language) has been published at LREC 2016 conference. This paper is the deliverable for this task – see http://alffa.imag.fr/wp-content/uploads/2013/12/LREC2016_DataCollection_And_ALFFA_Project.pdf

Elodie Gauthier also strongly contributed to the development of Lig_Aikuma Mobile App for speech data collection (joint work between two ANR projects : ALFFA and BULB) – see <https://lig-aikuma.imag.fr>

Task 3.2 : Machine-Assisted Annotation of Speech (LIG)

A paper, on this exact aspect, has been published at Interspeech 2017 – it is made available online on <https://arxiv.org/abs/1706.00465> (« Machine Assisted Analysis of Vowel Length Contrasts in Wolof » E. Gauthier, S. Voisin and L. Besacier – submitted to Interspeech 2017).

Task 3.3 : Corpora for targeted languages (LIG)

Ready to use ressources to build automatic speech recognition systems (ASR) for 5 languages (Amharic, Hausa, Swahili, Wolof, Fongbe) have been released and are available on

https://github.com/besacier/ALFFA_PUBLIC/tree/master/ASR/AMHARIC
https://github.com/besacier/ALFFA_PUBLIC/tree/master/ASR/SWAHILI
https://github.com/besacier/ALFFA_PUBLIC/tree/master/ASR/HAUSA
https://github.com/besacier/ALFFA_PUBLIC/tree/master/ASR/FONGBE
https://github.com/besacier/ALFFA_PUBLIC/tree/master/ASR/WOLOF

2 virtual machines (VM) have been also released for Fongbe and Wolof – see

https://github.com/besacier/ALFFA_PUBLIC/blob/master/ASR/FONGBE/FONGBE-vm
https://github.com/besacier/ALFFA_PUBLIC/blob/master/ASR/WOLOF/WOLOF-VM

Task 4.1 : Multilingual phonetiser prototype (VOX&LIG)

This deliverable has been replaced by language-specific phonetizers which have been developed separately for each targeted language. Moreover, the design is different for TTS (VOX) and for ASR (LIG, LIA). These phonetizers are kept private by the industrial partner of the project (Voxygen).

Task 4.2 : ASR & TTS prototypes (LIG, LIA & VOX)

Amharic, Hausa, Swahili, Fongbe and Wolof ASR systems were built with Kaldi [1] speech recognition toolkit. Hausa and Wolof TTS prototypes were developed. Details can be found on the publications available at <http://alffa.imag.fr/publications/>

A video on the first Wolof TTS voice ever produced is also available at : <http://alffa.imag.fr/video-the-first-wolof-voice-ever-created/>

Task 4.3 : Micro-Applications prototype (VOX)

A first micro-application (a multilingual calculator) was developed by Voxygen. It was presented during *Interspeech 2015 Show&Tell*, as well as during the *Francophonie's summit* in Dakar in 2014. A video illustrating this calculator can be found on the link below.

<http://alffa.imag.fr/youtube-video-about-the-multilingual-calculator-subtitled-in-english/>

Another Android application called *African Numbers* was developed in the context of ALFFA – see <http://alffa.imag.fr/african-numbers-a-new-android-app/>

Task 4.4 : Field testing of the micro-application

We helped a team participating to the Global Learning XPRIZE - see <http://learning.xprize.org> - challenge to help children of a developing country (Tanzania) to learn how to read and count with android apps - app included Swahili TTS and ASR developed in ALFFA - team was selected as one of 11 semifinalists (among 135 competing teams!) - app was tested with a small group of children in Dar es Salaam (Tanzania) in May 2017.

C RAPPORT D'AVANCEMENT

C.1 OBJECTIFS INITIAUX DU PROJET

Maximum 10 à 20 lignes.

Today is very favorable to the development of a market for speech in African languages. People's access to ICT is done mainly through mobile (and keyboard) and the need for voice services can be found in all sectors, from higher priority (health, food) to more fun (games, social media). For this, overcoming the language barrier is needed and this is what we propose in this project where two main aspects are involved: fundamentals of speech analysis (language phonetic and linguistic description, dialectology) and speech technologies (ASR and TTS) for African languages.

In the project, developed ASR and TTS technologies will be used to build micro speech services for mobile phones in Africa.

(see extended abstract on <http://alffa.imag.fr/abstract-of-alffa/>).

C.2 TRAVAUX EFFECTUÉS ET RÉSULTATS ATTEINTS SUR LA PÉRIODE CONCERNÉE

Maximum 1 page. Travaux et résultats obtenus pendant la période concernée, conformité de l'avancement des travaux avec le plan initialement prévu. Prévision de travaux pour la (les) prochaine(s) période(s).

Our achievements after 40 months of project are the following.

Languages documentation:

The goal was to provide a precise description of the targeted languages at the phonetic/phonological, morphological, and syntactical levels. Grammars of figures (numbers, dates, hours, amount, quantities) completed the scope of the task. Voxygen had already an expertise in some languages and the role of DDL was to provide further knowledge in order to correctly deal with specific features, notably on the phonological and morphological dimensions (for instance, tones, implosive and ejective consonants, complex alternations in morphology, etc.). Four white papers (see deliverables of task 2.1) have been produced for Swahili , Wolof , Hausa and Pulaar.

Data collection and speech technologies (ASR, TTS)

ASR systems for Swahili, Hausa, Amharic, Wolof and Fongbe have been built so far. All the data and scripts to build a complete ASR system for these languages are already available to the public on a *github* repository :

https://github.com/besacier/ALFFA_PUBLIC/tree/master/ASR

LIG used Kaldi speech recognition toolkit [1] for building our ASR systems. A summary of the ASR performance obtained for the five languages is given in *table 1* but more experimental details can be found in the README files of the github repository.

Task	WER (%)
Swahili Boadcast News	20.7
Hausa Read Speech	10.0
Amharic Read Speech	8.7
Wolof Read Speech (under dev.)	28.6
Fongbe	15.2

Table 1 : Performances of the ASR systems developed in ALFFA

The implemented approach to language resource development for TTS stems from the incremental approach followed by **Voxygen** for several years now. The key point of this methodology is that instead of developing the entire (under-documented and under-resourced) language at once, only part of the language is addressed at each stage. Step 1 consists in developing a TTS module able to read any numerical information (such as time, volume, price, date . . .). Application specific sentences may then be designed with numerical slots that are dynamically filled by TTS and automatically inserted seamlessly in the sentences (e.g. a speaking calculator, a mobile service providing agricultural market prices, etc.). Step 2 extends to the ability to fill any slot with a single word (merchandise name, company name, place name...) in pre-defined sentences. Step 3 (iterative) aims at full language coverage taking into account word functions and contexts, to provide fluid speech with adequate prosody. In the ALFFA project, first step TTS prototypes have been developed for Hausa, Wolof and Swahili and some fillers have been recorded for the multilingual speaking calculator needs. New developments of full voice concerned Wolof (see <http://alffa.imag.fr/video-the-first-wolof-voice-ever-created/>).

Micro-application prototype : multilingual calculator

Education is one of the straightforward domain for which speech enabled micro-applications are needed. **Voxygen** developed a multilingual speaking calculator to demonstrate the potential of speech technologies for African languages, with the help of LIA for the ASR part. The prototype,

which is an android app, offers different features: a simple voice-enabled calculator where the user enter the operation from the numeric keyboard (or using speech input) then the application reads the operation and the result ; a multiplication table mode where the user chooses a number then the calculator recites the corresponding table ; and a quizz mode where the user is invited to submit a complete equation and the calculator confirms if the answer is correct or not. A button allows to switch the language at any time or to make the calculator repeat the last utterance in the new selected language.

This speaking calculator has been extended (and Swahili voice has been added) for the needed of our participation to the Global Learning X-Prize (see <http://alffa.imag.fr/alffa-partners-participate-to-the-global-learning-xprize>).

Micro-application prototype : data collection tool

An Android App for collecting speech recordings with time-aligned translations was partially developed through ALFFA project (Elodie Gauthier from LIG strongly participated to its development). The app, called **Lig-Aikuma**, implements several features such as elicitation of speech from text, images and videos. A joint collaboration with LIA has continued in 2017 through the co-supervision of a student-engineer funded by LIA through ALFFA project. (the student-engineer has also ported LIA's speech library called ALIZE to Android environment). More details on Lig-Aikuma can be found on : <https://lig-aikuma.imag.fr>

Promoting Research and Innovation on African Language Technologies

ALFFA consortium also tries to promote speech technology for under-resourced (and especially African) languages by organizing events (conferences, workshops, special sessions). Here are the most salient actions done during the last 3 years :

-ALFFA members (L. Besacier LIG, P. Nocera LIA) were co-chairs of the SLTU (Spoken Language Technologies for Under-Resourced Languages) 2014 and 2016 workshops (2018 edition is planned in New Delhi).

-ALFFA members (M. Mangeot, L. Besacier LIG) were co-chairs of the TALAF Workshop on African Language Processing in 2014 and 2016. The proceedings are on <http://jibiki.univ-savoie.fr/~mangeot/TALAF>

-A mailing list on African Languages Processing Research is maintained by LIG (talaf@imag.fr)

-A list of experts on several African languages was gathered and this precious network was put on the Intranet of the ALFFA web site – see <http://alffa.imag.fr/network-of-experts-for-african-languages/>

-DDL (Sylvie Voisin) organized the *Sénélangues 2015 spring school* on west african languages description (Dakar, Senegal) – see <http://alffa.imag.fr/ecole-thematique-description-des-langues-dafrique-de-louest-senelanguages-2015/>

-Voxygen attended the *Africom* exhibition (Nov 2015 – Capetown – South-Africa)

-ALFFA partners organized a special session on *Sub-Saharan African languages* at Interspeech 2016 in San-Francisco

- L. Besacier (LIG) is in the comitee of the new *ELRA Workgroup on Less-resourced Languages* (see <http://alffa.imag.fr/1st-meeting-of-the-new-elra-workgroup-on-less-resourced-languages/>).

-L. Besacier organized a special session on *Digital revolution for Under-Resourced Languages* at last Interspeech 2017 in Stockholm – see <http://www.dldp.eu/en/newsletter/interspeech-2017-special-session-digital-revolution-under-resourced-languages-digrev-url>

References

[1] D. Povey, A. Ghoshal, G. Boulianne, L. Burget, O. Glembek, N. Goel, M. Hannemann, P. Motlicek, Y. Qian, P. Schwarz et al., "The kaldi speech recognition toolkit," in ASRU, 2011.

[2] H. Gelas, L. Besacier, and F. Pellegrino, "Developments of swahili resources for an automatic speech recognition system," in SLTU, Cape-Town, South Africa, 2012.

[3] T. Schlippe, E. G. K. Djomgang, N. T. Vu, S. Ochs, and T. Schultz, "Hausa large vocabulary continuous speech recognition." in SLTU, 2012.

[4] M. Tachbelie, S. T. Abate, and L. Besacier, "Using different acoustic, lexical and language modeling units for asr of an underresourced language - amharic," *Speech Communication*, vol. 56, 2014.

C.3 DIFFICULTÉS RENCONTRÉES ET SOLUTIONS

Maximum 10 à 20 lignes. Difficultés éventuelles rencontrées et solutions de remplacement envisagées ex : impasse technique, abandon d'un prestataire, maîtrise des délais, maîtrise des budgets. Faut-il revoir le contenu du projet ? Faut-il revoir le calendrier du projet ?

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C.4 FAITS ET RÉSULTATS MARQUANTS

En quelques lignes pour chaque fait ou résultat marquant. Cet élément pourrait donner lieu à communication, après accord du coordinateur du projet.

<p>We present below some other highlights and achievements of the ALFFA project :</p> <ul style="list-style-type: none">• Voxygen presented its multilingual calculator at the Francophonie's summit 2014 in Dakar (Senegal),• LIG is involved in ANR French-German BULB project (<i>Breaking the Unwritten Language Barrier</i>) which also deals with languages from Africa (for documentation purpose),• Several ALFFA ASR systems are now included directly in the KALDI [1] trunk,• Fulfulde – English – French dictionaries were computerised and made available on the Web by LIG – see http://papillon.imag.fr/• A video presenting the multilingual calculator (Voxygen, LIA) was recently published on Youtube – see http://alffa.imag.fr/youtube-video-about-the-multilingual-calculator-subtitled-in-english/• A video presenting the Wolof voice (Voxygen) was recently published on Youtube – see http://alffa.imag.fr/video-the-first-wolof-voice-ever-created/• ALFFA project and multilingual calculator were presented during « Salon de l'innovation en TALN » in Marseille in 2014 and at <i>Interspeech 2015 Show&Tell session</i>• ALFFA partners participated to the Global Learning XPRIZE (open source software to help children from developing countries to learn basic reading and maths) http://learning.xprize.org• ALFFA Wolof speech corpus was used for ASRU/ ZR-Challenge 2017 – see http://zerospeech.com• ALFFA mentioned in an article from French quotidien <i>Les Echos</i> – see https://www.lesechos.fr/idees-debats/sciences-prospective/0211814265707-les-nouvelles-promesses-de-la-voix-artificielle-2066384.php

C.5 TRAVAUX SPÉCIFIQUES AUX ENTREPRISES (LE CAS ÉCHÉANT)

Entreprise Voxygen

Maximum 10 à 20 lignes par entreprise. Pour chaque entreprise du consortium, décrire les activités dans le projet, en se concentrant sur les apports, collaborations et perspectives liés au projet. Préciser notamment les perspectives d'application industrielle ou technologique, de potentiel économique et commercial, d'intégration dans l'activité industrielle, etc.

Voxygen	
Rédacteur (nom + adresse mél)	Olivier Rosec olivier.rosec@voxygen.fr
During this project Voxygen focused its work on the three following languages: Wolof, Pulaar, Swahili.	
Regarding the Wolof, four main tasks were carried out. First Voxygen delivered a verified text corpus containing 2K mots including numerical data, books and the lexicon currently integrated into Voxygen's TTS engine in Wolof. Second, a first «Slot'n Fill » was built using two use cases: a car navigation system and a calculator. Third, Voxygen defined the text to be recorded in order to build a learning corpus for ASR. This text was based on a recording script dedicated to TTS which was shown to have a good phonetic and prosodic coverage. Fourth, Voxygen recorded,	

processed (phonetic and segmentation checking) and finally created a first female voice in Wolof, called Nabou.

In Pulaar, the work was essentially about language description. First exchanges with Pulaar expert linguists were initiated in autumn 2015. From these exchanges Voxygen compiled the acquired linguistic knowledge and delivered a white paper at month 34. A clean text corpus of 1.5 Kmots was also produced.

As for the Swahili, Voxygen started the development in TTS by integrating the numerical data. This action was carried out in the context of the Xprize contest which was considered by the consortium as a good opportunity to disseminate the work during the ALFFA project. Voxygen created a recording script dedicated to the calculator use case. This corpus was acquired in Tanzania.

Moreover, Voxygen had also contributions related to four other languages: Hausa, Zarma, Bamabara and Serere. In Hausa, Zarma and Bambara, Voxygen compiled the knowledge acquired during previous projects related to simple « Slot'n Fill » applications (m-agri). More specifically, for each of these languages a lexicon was produced. Lexicon includes the basic number reading entries as well as some words mostly related to the agricultural context. In Serere the work was essentially a collaboration set up with expert linguists in order to gather relevant information related to this language.

D VALORISATION ET IMPACT DU PROJET DEPUIS LE DÉBUT

Cette partie rassemble des éléments cumulés depuis le début du projet qui seront suivis tout au long de son avancée, et repris dans son bilan final.

D.1 PUBLICATIONS ET COMMUNICATIONS

Citer les publications résultant du projet en utilisant les normes habituelles du domaine. Si la publication est accessible en ligne, préciser l'adresse. L'ANR encourage, dans le respect des droits des co-auteurs et des éditeurs, à publier les articles résultant des projets qu'elle finance dans l'archive ouverte pluridisciplinaire HAL : <http://hal.archives-ouvertes.fr/>

***Attention** : éviter une inflation artificielle des publications, mentionner uniquement celles qui résultent directement du projet (postérieures à son démarrage, et qui citent le soutien de l'ANR et la référence du projet).*

Liste des publications multipartenaires (résultant d'un travail mené en commun)	
International	Reuves à comité de lecture
	Ouvrages ou chapitres d'ouvrage
	Communications (conférence)
	<ol style="list-style-type: none"> 1. Laurent Besacier, Elodie Gauthier, Mathieu Mangeot, Philippe Bretier, Paul Bagshaw, Olivier Rosec, Thierry Moudenc, Francois Pellegrino, Sylvie Voisin, Egidio Marsico, Pascal Nocera - Speech Technologies for African Languages: Example of a Multilingual Calculator for Education, <i>Show & Tell session of INTERSPEECH 2015</i>. Dresden, Germany (2015) 2. Elodie Gauthier, Laurent Besacier, Sylvie Voisin. Automatic Speech Recognition for African Languages with Vowel Length Contrast. 5th Workshop on Spoken Language Technologies for Under-resourced Languages (SLTU), May 2016, Yogyakarta, Indonesia. <i>Procedia computer science</i>, <10.1016/j.procs.2016.04.041>. <hal-01350040> 3. Elodie Gauthier, Laurent Besacier, Sylvie Voisin, Michael Melese, Uriel Pascal Elingui. Collecting Resources in Sub-Saharan African Languages for Automatic Speech Recognition: a Case Study of Wolof. 10th Language Resources and Evaluation Conference (LREC 2016), May 2016, Portoroz, Slovenia. <i>LREC 2016 proceedings</i>. <hal-01350037> 4. Elodie Gauthier, Laurent Besacier, Sylvie Voisin. Speed perturbation and vowel duration modeling for ASR in Hausa and Wolof languages. <i>INTERSPEECH 2016</i>, Sep 2016, San-Francisco, United States. <i>Interspeech 2016 proceedings</i>. <hal-01350057> 5. Machine assisted analysis of vowel length contrasts in Wolof. Elodie Gauthier, Laurent Besacier and Sylvie Voisin.

	INTERSPEECH 2017 . Stockholm (Sweden). August 2017.
France	Reuves à comité de lecture
	Ouvrages ou chapitres d'ouvrage
Actions de diffusion	Communications (conférence)
	Articles de vulgarisation
	Conférences de vulgarisation
	Autres

1. Francophonie Numérique : Voxygen dévoile sa calculatrice qui parle Wolof – RĒUSSIRBusiness.com – Mensuel économique – **2015** - <http://www.reussirbusiness.com/francophonie-numeriquevoxygen-devoile-sa-calculatrice-qui-parle-wolof/>
2. Les nouvelles promesses de la voix artificielle – Quotidien Les Echos – 20/2/**2017** - <https://www.lesechos.fr/idees-debats/sciences-prospective/0211814265707-les-nouvelles-promesses-de-la-voix-artificielle-2066384.php>

Liste des publications mono-partenaires		
International	Reuves à comité de lecture	
	Ouvrages ou chapitres d'ouvrage	
	Communications (conférence)	
	6. Computerization of African languages-French dictionaries. Enguehard C., Mangeot M. In LREC 2014 workshop: Collaboration and Computing for Under Resourced Languages in the Linked Open Data Era – CCURL 2014 , Islande (2014)	
	7. Phoneme-based English-Amharic Statistical Machine Translation. Mulu Gebreegziabher Teshome, Laurent Besacier, Girma Taye and Dereje Teferi. IEEE AFRICON 2015 . Adis Abeba, Ethiopia (2015).	
	8. Michael Melese, Laurent Besacier, Million Meshesha. Amharic Speech Recognition for Speech Translation. Atelier Traitement Automatique des Langues Africaines (TALAF). JEP-TALN 2016 , Jul 2016, Paris, France. Actes de la conférence conjointe JEP-TALN-RECITAL 2016.	
	9. LIG-AIKUMA: a Mobile App to Collect Parallel Speech for Under-Resourced Language Studies. Elodie Gauthier, David Blachon, Laurent Besacier, Guy-Noel Kouarata, Martine Adda-Decker, et al. Interspeech 2016 (short demo paper), Sep 2016, San-Francisco, France. Interspeech 2016 proceedings. <hal-01350062>	
	10. First Automatic Fongbe Continuous Speech Recognition System: Development of Acoustic Models and Language Models, Laleye, Fréjus and Besacier, Laurent and Ezin, Eugène C. and Motamed, Cina, Federated Conference on Computer Science and Information Systems , 2016.	
	11. David Blachon, Elodie Gauthier, Laurent Besacier, Guy-Noël Kouarata, Martine Adda-Decker, et al.. Parallel Speech Collection for Under-resourced Language Studies Using the Lig-Aikuma Mobile Device App. Workshop on Spoken Language Technologies for Under-resourced Languages (SLTU), May 2016 , Yogyakarta, Indonesia. Procedia computer science, 2016	
	France	Reuves à comité de lecture
	Ouvrages ou chapitres d'ouvrage	
Communications (conférence)		
Articles de vulgarisation		
Actions de diffusion	Conférences de vulgarisation	
	Autres	

D.2 AUTRES ÉLÉMENTS DE VALORISATION

Les éléments de valorisation sont les retombées autres que les publications. On détaillera notamment :

- brevets nationaux et internationaux, licences, et autres éléments de propriété intellectuelle consécutifs au projet.
- logiciels et tout autre prototype
- actions de normalisation
- lancement de produit ou service, nouveau projet, contrat,...
- le développement d'un nouveau partenariat,
- la création d'une plate-forme à la disposition d'une communauté
- création d'entreprise, essaimage, levées de fonds
- autres (ouverture internationale,..).

Ce tableau détaille les brevets nationaux et internationaux, licences, et autres éléments de valorisation consécutifs au projet, du savoir-faire, des retombées diverses en précisant les partenariats éventuels. Voir en particulier celles annoncées dans l'annexe technique.

Liste des éléments. Préciser les titres, années et commentaires	
Brevets internationaux obtenus	
Brevet internationaux en cours d'obtention	
Brevets nationaux obtenus	
Brevet nationaux en cours d'obtention	
Licences d'exploitation (obtention / cession)	
Créations d'entreprises ou essaimage	
Nouveaux projets collaboratifs	1. LIG is involved in ANR French-German BULB project (Breaking the Unwritten Language Barrier) which also deals with languages from Africa (for documentation purpose) – see http://alffa.imag.fr/lig-involved-in-bulb-project-breaking-the-unwritten-language-barrier/
Colloques scientifiques	1. Voir plus haut
Autres (préciser)	

D.3 PÔLES DE COMPÉTITIVITÉ (PROJET LABELLISÉS)

Pour les projets labellisés par un ou plusieurs pôles de compétitivité,

Collaboration du projet avec le(s) pôle(s) ayant labellisé

Quelles collaborations y a-t-il eu entre votre projet et le(s) pôle(s) de compétitivité l'ayant labellisé ?

D.4 PERSONNELS RECRUTÉS EN CDD (HORS STAGIAIRES)

Ce tableau dresse le bilan du projet en termes de recrutement de personnels non permanents sur CDD ou assimilé. Renseigner une ligne par personne embauchée sur le projet quand l'embauche a été financée partiellement ou en totalité par l'aide de l'ANR et quand la contribution au projet a été d'une durée au moins égale à 3 mois, tous contrats confondus, l'aide de l'ANR pouvant ne représenter qu'une partie de la rémunération de la personne sur la durée de sa participation au projet. Les stagiaires bénéficiant d'une convention de stage avec un établissement d'enseignement ne doivent pas être mentionnés.

Des données complémentaires sur le devenir professionnel des personnes concernées seront demandées à la fin du projet. Elles pourront faire l'objet d'un suivi jusqu'à 5 ans après la fin du projet.

Identification				Avant le recrutement sur le projet			Recrutement sur le projet		
Nom et prénom	Sexe H/F	Adresse email (1)	Date des dernières nouvelles	Dernier diplôme obtenu au moment du recrutement	Lieu d'études (France, UE, hors UE)	Expérience prof. antérieure (ans)	Partenaire ayant embauché la personne	Poste dans le projet (2)	Date de recrutement
Gauthier Elodie	F	elodie.gauthier@imag.fr		Master	France	Non	LIG	Doctorante	1/10/2014
Baudson Guillaume	M	Baudson.guillaume@		License	France	Non	LIA	Alternant	1/10/2016

		hotmail.fr							

Aide pour le remplissage

(1) **Adresse email** : indiquer une adresse email la plus pérenne possible

(2) **Poste dans le projet** : post-doc, doctorant, ingénieur ou niveau ingénieur, technicien, vacataire, autre (préciser)

(3) **Durée missions** : indiquer en mois la durée totale des missions (y compris celles non financées par l'ANR) effectuées ou prévues sur le projet

Les informations personnelles recueillies feront l'objet d'un traitement de données informatisées pour les seuls besoins de l'étude anonymisée sur le devenir professionnel des personnes recrutées sur les projets ANR. Elles ne feront l'objet d'aucune cession et seront conservées par l'ANR pendant une durée maximale de 5 ans après la fin du projet concerné. Conformément à la loi n° 78-17 du 6 janvier 1978 modifiée, relative à l'Informatique, aux Fichiers et aux Libertés, les personnes concernées disposent d'un droit d'accès, de rectification et de suppression des données personnelles les concernant. Les personnes concernées seront informées directement de ce droit lorsque leurs coordonnées sont renseignées. Elles peuvent exercer ce droit en s'adressant l'ANR (<http://www.agence-nationale-recherche.fr/Contact>).

D.5 ÉTAT FINANCIER

Donner un état indicatif de la consommation des crédits par les partenaires. Indiquer la conformité par rapport aux prévisions et expliquer les écarts significatifs éventuels.

Voir états renvoyés individuellement par chaque partenaire.

E ANNEXES ÉVENTUELLES