

Amended project

Project acronym	I-SITE ULNE
Titre du projet en français	Université Lille Nord-Europe « Sustain & Expand »
Project title in English	University Lille Nord-Europe "Sustain & Expand"
Principal investigator	Name, First name: BLAISE Fabienne Contact information: presidence@univ-lille3.fr
Institution leading the project (Project leader)	Name: Université Lille 3 Indicate the type of institution: University
Endowment requested for the Initiative, in thousands of euros¹	618 000

¹ Labex and IDEFI excluded

LIST OF THE CONSORTIUM MEMBERS PARTICIPATING (PARTNERS) IN THE INITIATIVE (PROJECT LEADER EXCLUDED)

Higher education and research establishments	Research organisations	Others
Université Lille 1	CNRS	Centre Hospitalier Régional Universitaire de Lille
Université Lille 2	INSERM	Institut Pasteur de Lille
Centrale Lille	INRIA	
École Nationale Supérieure de Chimie de Lille		
École des Mines de Douai		
École Supérieure de Journalisme		
Sciences Po Lille		
École Nationale Supérieure des Arts et Industries Textiles		
École Nationale Supérieure d'Architecture et du Paysage de Lille		
Télécom Lille		
Arts et Métiers Paristech (campus de Lille)		

LIST OF PARTNERS EXTERNAL TO THE CONSORTIUM LEADING THE INITIATIVE

Higher education and research establishments and research organisations	Socio-economic players	Others
University of Leuven	190 companies signed a written commitment with a total of 78.1 million euros for cofounding I-SITE ULNE actions	Conseil régional Hauts-de-France
Université d'Artois		Métropole Européenne de Lille
Université du Littoral Côte d'Opale		
Université de Valenciennes et du Hainaut Cambrésis		
Fédération Universitaire et Polytechnique de Lille		
SKEMA Business School		
Centre Oscar Lambret		
IFSTTAR		
IFREMER		
ONERA		

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Résumé opérationnel

L'initiative d'excellence "Université Lille Nord-Europe" (I-SITE ULNE) est un projet ambitieux de transformation systémique de l'ensemble du paysage de la recherche et de l'enseignement supérieur en région Hauts-de-France. Son but consiste en **la création d'une grande université internationale**, classée parmi les 50 premières en Europe avant 10 ans : l'Université Lille Nord-Europe (ULNE).

Notre ambition, fondée sur l'analyse approfondie et objective de nos forces et de notre potentiel, est de :

- **Restructurer et simplifier** de manière significative le paysage de l'enseignement et de la recherche lillois pour en renforcer la performance ;
- **Faire converger** l'ensemble des forces du groupement vers une Université intégrée, l'ULNE, sous la forme d'un établissement d'enseignement supérieur et de recherche d'un nouveau type ;
- Structurer notre excellence en recherche, pour la **renforcer** et la **diffuser** (" **sustain & expand**"), selon trois « Hubs » interconnectés et couvrant l'ensemble du spectre disciplinaire : "**Precision Human Health**", "**Science for a Changing Planet**" et "**Human-Friendly Digital World**" ;
- **Renouveler** profondément la transmission de la connaissance en créant des « Graduate Schools » adossées aux Hubs, qui mettront en œuvre des méthodes pédagogiques innovantes et innoveront l'ensemble des activités de formation de l'Université ;
- **Augmenter notre attractivité en optimisant** les conditions d'accueil et de travail des étudiants et des chercheurs dans le but de favoriser leur désir d'apprendre, de chercher, d'innover, de créer et d'entreprendre ;
- **Profiter de la situation géographique de l'ULNE** au cœur du Nord de l'Europe pour encourager la **mobilité internationale** et attirer de nouveaux talents en développant des partenariats stratégiques et en créant un Campus Européen ; à ce titre, le partenariat avec la **KU Leuven** est un levier puissant pour atteindre notre objectif ;
- **Affirmer le rôle clé de l'ULNE** au sein de son territoire en développant une approche partenariale volontariste avec l'ensemble des acteurs du monde socio-économique ainsi qu'avec les collectivités.

Les membres du consortium I-SITE ULNE qui portent cette ambition sont :

- **L'Université de Lille** (résultant de la fusion en janvier 2018 des Universités Lille1, Lille2 et Lille3) ;
- **Les Grandes Écoles** (dont cinq sont déjà engagées dans un processus de fusion) : Centrale Lille, École Nationale Supérieure des Arts et Industries Textiles (ENSAIT), École Nationale Supérieure de Chimie de Lille (ENSCL), IMT Lille-Douai (fusion de l'École des Mines de Douai et Télécom Lille en janvier 2017), Sciences Po Lille, École Supérieure de Journalisme de Lille (ESJ), École Nationale Supérieure d'Architecture et Paysage de Lille (ENSAPL) et Arts et Métiers Paris-Tech (ENSAM, Campus de Lille) ;
- Les **organismes de recherche** : le CNRS, l'INSERM et l'INRIA ;
- Le **Centre Hospitalier Régional Universitaire (CHRU)** de Lille et l'**Institut Pasteur de Lille (IPL)**.

Co-construite pour entraîner l'ensemble du territoire dans sa dynamique, l'Initiative associe à sa démarche un groupe de partenaires extérieurs : l'Université de Leuven-KU Leuven (classée 93 à l'ARWU 2016), la Fédération Universitaire et Polytechnique de Lille (FUPL), le Centre Oscar Lambret, l'Université d'Artois, l'Université du Littoral Côte d'Opale, l'Université de Valenciennes et du Hainaut Cambrésis, la SKEMA Business School, l'IFSTTAR, l'ONERA et l'IFREMER. Elle est également très

fortement soutenue par l'ensemble de son environnement : la Région Hauts-de-France et la Métropole Européenne de Lille (MEL) dédient respectivement 254 M€ et 60 M€ au projet sur les quatre premières années, et 190 entreprises affichent pas moins de 78,1 M€ de soutien aux projets de Recherche et Développement.

Fort de toute cette richesse d'acteurs et de ce soutien massif, l'I-SITE ULNE est conçue comme le catalyseur qui conduira le consortium vers l'Université Lille Nord-Europe. Son périmètre d'excellence objectif représente d'ores et déjà 34% des chercheurs et enseignants-chercheurs du consortium. L'ambition est de doubler ces forces d'ici dix ans. Pour y parvenir, la trajectoire de l'I-SITE ULNE est déterminée par une stratégie globale « Sustain & Expand » qui prévaut à la définition de toutes les actions concrètes de l'Initiative : « Sustain » pour développer davantage nos points forts et « Expand » pour accroître la surface de l'excellence.

L'I-SITE ULNE concentre ainsi sa politique de recrutement sur l'attraction des meilleurs talents parmi les chercheurs et enseignants-chercheurs. Il s'agit aussi de détecter et de recruter les meilleurs étudiants. La création de « Graduate Schools » et la mise en place d'un incubateur doctoral dès l'entrée à l'Université et dans les Grandes Écoles sont conçues pour favoriser ces actions. Le développement et la mise en œuvre de méthodes et d'outils pédagogiques innovants, portés par un Centre d'Innovation Pédagogique et Numérique en relation avec la recherche menée dans le Hub "**Human-Friendly Digital World**", constitueront également l'un de nos objectifs majeurs pour renforcer la qualité et l'attractivité de la formation. Cette stratégie d'innovation pédagogique, qui a vocation à diffuser dans l'ensemble du consortium et des partenaires extérieurs concernés, est également le levier du développement d'une formation continue renouvelée à destination des entreprises et collectivités, avec qui les relations co-créatrices de valeur seront amplifiées.

L'I-SITE ULNE est portée par une fondation créée dès le mois de mars 2017. Sa gouvernance est conçue pour amener le projet au succès. Elle est simple, agile et efficace, tout en fédérant l'ensemble du consortium et de ses partenaires. A cette fin, le projet est dirigé par un Comité de pilotage de taille réduite placé sous la responsabilité d'un(e) Président(e) de la Fondation et mis en œuvre par une agence opérationnelle. Un conseil scientifique composé exclusivement de membres extérieurs, et aux deux tiers d'internationaux, assure le suivi de la qualité des actions mises en œuvre et de la trajectoire.

Durant les quatre premières années, le Comité de pilotage est chargé de la mise en place de l'Initiative et de l'utilisation optimale des moyens. En parallèle, il conduit et alimente, avec l'ensemble des acteurs, la réflexion sur la création de l'ULNE. Durant cette période, les membres du consortium gèrent et stabilisent les changements institutionnels intervenant entre 2017 et 2020 (fusions et regroupements). Ils travaillent avec le Comité de pilotage à la mise en place des éléments clés nécessaires à la création d'une grande Université internationale (signature scientifique et doctorat uniques, politique de ressources humaines et de relations internationales coordonnées, ...). Les statuts de l'ULNE les plus adaptés aux objectifs visés sont discutés avec l'Etat.

Dix ans au plus tard après la labellisation I-SITE, l'ULNE sera créée et sera classée parmi les 50 meilleures universités européennes ; la fondation qui porte l'I-SITE ULNE sera pérennisée au sein de l'Université pour promouvoir l'excellence. L'ULNE assurera alors pleinement, au sein d'un Campus européen, ses missions de service public pour former l'ensemble de ses étudiants et les faire bénéficier de l'effet d'entraînement majeur apporté par l'Initiative, notamment en termes de recherche et innovation, d'efficacité pédagogique et de notoriété.

Nos mots-clés : Excellence, Décloisonnement, Cohérence, Co-construction, International, Défi.

Executive summary

The excellence Initiative « Université Lille Nord-Europe » (I-SITE ULNE) is an ambitious project that involves a systemic transformation of the research and higher education landscape in Hauts-de-France Region. It aims to create a **world-class University** ranked among the top 50 European Universities in the coming 10 years: the University Lille Nord-Europe (ULNE).

Our ambition, based on a thorough and objective analysis of our strengths and potential, is to:

- Restructure and significantly simplify Lille research and higher education landscape to increase its performance;
- Unite all consortium strengths towards an integrated University, ULNE, representing a novel type of research and higher education institution;
- Structure our excellence in research, to **sustain and expand that excellence**, within three interconnected Hubs, covering the entire spectrum of disciplines: “**Precision Human Health**”, “**Science for a Changing Planet**” and “**Human-friendly Digital World**”;
- **Reinvent** knowledge transfer by creating three **Graduate Schools** supported by the Hubs, that will implement innovative teaching and learning methods and will disseminate them to all academic partners;
- **Enhance our attractiveness** by offering a world class environment to students, researchers and teachers to spur their desire to learn, conduct research, innovate and create;
- **Take benefits from the geographic localization of ULNE** at the heart of Northern Europe to develop international mobility and attract new talents with the set-up of strategic collaborations and the creation of a European Campus; the latter will benefit from a partnership with KU Leuven that will represent a key lever to reach our objective;
- **Assert ULNE key role in its territory** with the development of proactive collaborations with the socioeconomic players.

The members of I-SITE ULNE consortium who share this common ambition are:

- **University of Lille** (merging from Universities Lille 1, Lille 2 and Lille 3 in January 2018);
- The “**Grandes Écoles**” (5 of them are already engaged in merging processes): Centrale Lille, École Nationale Supérieure des Arts et Industries Textiles (ENSAIT), École Nationale Supérieure de Chimie de Lille (ENSCL), IMT Lille-Douai (fusion de l’École des Mines de Douai et Télécom Lille en janvier 2017), Sciences Po Lille, École Supérieure de Journalisme de Lille (ESJ), École Nationale Supérieure d’Architecture et Paysage de Lille (ENSAPL) et Arts et Métiers Paris-Tech (ENSAM, Campus de Lille);
- **Research Organisms**: CNRS, INSERM and INRIA;
- **Healthcare institutions**: Centre Hospitalier Régional Universitaire de Lille (CHRU) and Institut Pasteur de Lille (IPL).

To drive the regional territory in this momentum, the Initiative associates a group of external partners: the University of Leuven (KU Leuven, ARWU 2016 rank: 93), Fédération Universitaire et Polytechnique de Lille (FUPL), Centre Oscar Lambret, l’Université d’Artois, l’Université du Littoral Côte d’Opale, l’Université de Valenciennes et du Hainaut Cambrésis, SKEMA Business School, IFSTTAR, ONERA and IFREMER. The Initiative is also strongly supported by its environment: Hauts-de-France Region and Métropole Européenne de Lille (MEL) respectively dedicate 254 M€ and 60 M€ of resource over the first 4 years. In addition, 190 companies have dedicated 78.1 M€ to support research and development projects.

Based on these strengths and mobilized resources, I-SITE ULNE is designed as a catalyst to conduct the transformation process towards University Lille Nord-Europe. Its perimeter of excellence represents already 34% of the researchers and academic staff of the consortium. The ambition is to double this pool of excellence in 10 years. To reach this goal, the I-SITE ULNE roadmap is defined by the overall strategy "Sustain and Expand", overarching all the Initiative actions: "Sustain" to reinforce our strengths and "Expand" to amplify our pool of excellence.

I-SITE ULNE focuses its recruitment policy on attracting the **best talents** among researchers and teachers. It also requires to detect and to recruit the most talented students. The creation of **Graduate Schools** and the set-up of the **Doctoral Incubator** from the undergraduate level and in "Grandes Écoles" are designed to support this ambition. The development and the implementation of **innovative pedagogical methods and tools** will be supported by the creation of a **Center of Pedagogical and Digital Innovation**. This center will be linked to Hub "Human-friendly Digital World" and contribute to the attractiveness of the recruitment policies. This innovative pedagogical strategy will be disseminated among all the partners of the Initiative and will be a key asset to develop **lifelong learning** with socioeconomic players to increase value generating collaborations.

I-SITE ULNE is implemented by a Foundation, created as soon as March 2017, whose governance is designed for the success of the Initiative: it is simple, agile and efficient, associating all partners of the Initiative. It is driven by a **Steering Committee** with a reduced number of representatives, under the responsibility of the President of the Foundation. The Initiative is enforced with the support of an operational agency. A **Scientific Advisory Board**, exclusively consisting of external members, with at least two-third of international experts, ensures the quality and evaluation of the initiative progress and achievements.

For the first four years, the Steering Committee is entrusted with the implementation of the Initiative and the optimal use of funds and resources. Simultaneously, the Steering Committee drives and engages all the partners of the Initiative in the construction of ULNE. Over this period, the members of the consortium manage and stabilize the institutional changes occurring between 2017 and 2020 (merging and structuration). They work with the Steering Committee to paving the way to the creation of a world-class University (unique scientific and doctoral affiliation, attractive human resource policies and coordinated international policies). The adapted legal framework for ULNE is discussed with the French State.

Ten years from the I-SITE labelling, ULNE will be created and ranked among the top 50 best European Universities; the Foundation implementing I-SITE ULNE will be maintained in the target University to promote excellence. ULNE will assume, within a European Campus, its mission of public service to educate all students who will take benefits from the momentum initiated by I-SITE ULNE especially in terms of research and innovation, pedagogical efficiency and reputation.

Our key words: Excellence, Synergy, Cohesion, Co-construction, International, Challenge

Attributes of the consortium

1.1 PRESENTATION OF THE PROJECT LEADER AND PARTNERS

I-SITE ULNE sets out on the ambition to create a rankable Research Intensive University: **the University Lille Nord-Europe (ULNE)**. The construction of the target University will reinforce the cohesion and commitment of its constitutive entities. This ambitious transformation of the regional and trans-regional scientific and higher education landscape is irreversibly engaged among the following stakeholders, members of the initiative:

- The Lille University which is the result of the ongoing merging of University Lille 1 (Sciences & Technologies), University Lille 2 (Law and Health) and University Lille 3 (Social Sciences and Humanities);
- The nine “Grandes Écoles”: Centrale Lille, École Nationale Supérieure de Chimie de Lille (ENSCL), École des Mines de Douai (EMD), École Supérieure de Journalisme (ESJ), Sciences Po Lille (SPL), École Nationale Supérieure des Arts et Industries Textiles (ENSAIT), École Nationale Supérieure d'Architecture et du Paysage de Lille (ENSAP), Télécom Lille (TL), and Campus de Lille des Arts et Métiers Paristech (ENSAM) ;
- Three national research organizations: Centre National de la Recherche Scientifique (CNRS), Institut National de Recherche en Informatique et en Automatique (INRIA), Institut National de la Santé et de la Recherche Médicale (INSERM);
- The Regional University Hospital of Lille (CHRU) and the Institut Pasteur de Lille (IPL).

The above members play an active part in the **transformation process** and are key stakeholders for the structuring, integration and forging of the research and higher education landscape into the target University model. These members are uniting their forces in a single entity: a **Foundation** is being established to launch and implement the I-SITE initiative in 2017.

In addition, the initiative is supported by the Regional stakeholders of the research and higher education landscape in the Hauts-de-France Region: Université d'Artois, Université du Littoral Côte d'Opale, Université de Valenciennes et du Hainaut Cambrésis, Fédération Universitaire Polytechnique de Lille, Skema Business School, Centre Oscar Lambret (Regional center against cancer), Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Institut Français de Recherche pour l'Exploitation de la MER (IFREMER), Office National d'Études et de Recherches Aérospatiales (ONERA), as well as local authorities including Hauts-de-France Region and Métropole Européenne de Lille (MEL). Further, the University of Leuven (KU Leuven) participates in the initiative as an external partner and the supports European strategy of the members: strengthening existing collaborations will pave the way to tighter integration over the 4 years program and contribute to the overall ambition. The following table summarizes the regional key figures (table 1; source: Strater Hauts-de-France, October 2016):

Table 1: Key regional figures (source: STRATER)

Key figures (Région Hauts-de-France)	National weight	National rank
Students enrolled in higher education (2012-2013)	8.9%	4 th
Research personnel	3.9%	8 th
Researchers (FTE)	3.6%	8 th
Scientific production (OST 2012)	5.0%	7 th
Technological production (European patent applications OST 2012)	0.2%	8 th
Graduated students (master)	8.1%	6 th
Graduated Ph.D.	4.2%	8 th
ERC nominations	Nb: 6 in 2014	11 th
Students enrolled in entrepreneurship and innovation training	Nb: 7 985	2 nd
Scientific publications in:		
- Mathematics	6.6%	5 th
- Engineering	6.1%	6 th
- Humanities	5.8%	5 th
- Medical research	5.7%	6 th
- Chemistry	5.6%	6 th
- Social Sciences	4.7%	5 th

1.2 SELECTED PIA (INVESTMENTS OF THE FUTURE) PROGRAMME PROJECTS

Selected LABEXes managed by the Initiative

Tab. A. - LABEX managed by the Initiative

Project acronym	Project summary (80 signs) or key words describing it
CaPPA	Chemical and Physical Properties of the Atmosphere
CEMPI	European Centre for Mathematics, Physics and their Interactions
DistalZ	Alzheimer's disease, innovation strategies, transdisciplinary approach
EGID	European genomic institute for diabetes, world class research, innovation center
ParaFrap	French Parasitology Alliance for Health Care

Selected IDEFIs managed by the Initiative

Tab. B. - IDEFI managed by the Initiative

Project acronym	Project summary (80 signs) or key words describing it
ADICODE	Innovation by co-design in learning-based project master 1 and master 2

Selected Investments of the Future projects contributing to the scientific and results exploitation policy of the Initiative

Tab. C. - Other PIA projects managed

Call for proposals concerned	Project acronym	Project summary (80 signs) or key words describing it
EQUIPEX	IMAGINEX BIOMED	High-throughput imaging screening and high-resolution microscopy facility
EQUIPEX	LIGAN-PM	Lille integrated genomic advanced network for personalized medicine
EQUIPEX	REALCAT	High-Throughput Technologies Platform for Biorefineries Catalysts
EQUIPEX	ExCELSIOR	Center for Large Spectrum prOpeRties of nanostructures

		from DC to Mid-Infrared
EQUIPEX	FLUX	Transmission of high-intensity light through optical fibre
EQUIPEX	IRDIVE	Digital and interactive visual environments, technological platform
EQUIPEX	LEAF	Laser processing platform for multifunctional electronics on flex
IRT	RAILENIUM	Improved efficiency, performance and productivity of the rail system
RHU	PRECINASH	Non-alcoholic steato-hepatitis (NASH) from disease stratification to novel therapeutic approaches
ITE	IFMAS	Biomass conversion into biobased materials

Tab. D. - Non-managed PIA projects²

Calls for proposals concerned	Project acronym	Project summary (80 signs) or key words describing it
LABEX	ICST	The ICST project aims at developing a national network of laboratories to work on therapeutic utility of ionic channels.
BIOINFORMATIQUE	ICEBERG	Development of an experimental platform to provide tools to study intracellular concentrations of proteins in living cells (microfluidics, microscopy, software).
COHORTES	COBLANCE	Data follow up; 2,000 bladder cancer patients.
COHORTES	CRYOSTEM	Transplant; Rejection; Stem cells; Predictive factors; Treatment; Prognosis.
INFRA BIO	AKER	Reinvestment in allelic diversity of beet by developing new breeding & selection tools.
INFRA BIO	PEAMUST	Multi-stress & biological regulation adaptation for improving performance & stability of protein peas.
INFRASTRUCTURE	BIO-BANQUES	Nationwide integration; Collection; Storage; Human & microbiological collections.
INFRASTRUCTURE	F CRIN	Large clinical trials; Disease determinants & treatments efficiency and security.
NANOBIOTECHNOLOGIES	VIBBano	Exploring the potential for nanotechnologies to develop advanced instruments enabling a better understanding of the dynamic of biological functions, and developing a

² Green, blue, grey and white colors for health-, planet-, digital world- and non-related PIA projects, respectively.

		new technological field of bio-inspired nano-systems.
EQUIPEX	ROCK	Development of a spectrometer dedicated to the research of new materials for application in the field of batteries & biofuels.
ITE	PIVERT	The first European center for the valorization of the whole oilseed plant into renewable energy & chemical products.
IRSN	MIRE	Study and improvement of limitation (or "migration") of radioactive waste during a fusion-related accident at the heart of a nuclear reactor ("serious accident").
LABEX	DRIHM OHM	Interdisciplinary research facility - Human-Environment Interactions - observing anthropized socio-ecosystems & their complexity.
LABEX	GANEX	Aims to create a public-private national network on the production of Gallium Nitrid electronic components.
LABEX	IPOPS	Individuals, Groups & Companies - Methodological renewal of population science & interdisciplinary exchange.
EQUIPEX	FIT	The project aims to put together a national hardware and software network enabling full scale tests of future Internet-based technologies.
EQUIPEX	REFIMEVE+	A world first, this project aims to roll out the transfer of an ultra-stable optical frequency, devoid of traffic disruption, via the Internet nationwide.
IDEFI	AVOSTTI	Support science & technical professionals to qualify as Science & Technology Engineers - "Polytech Network" project (13 universities), to enhance attractiveness scientific courses.
IDEFI	CMI-FIGURE	Implement a new "national" Master program within French Universities dedicated to the training of future professional engineers.
IDEFI	FINMINA	National implementation of excellence training in micro and nanoelectronics.
IDEFI	REMIS	Network; Formations; Health sectors; Management; Health engineering.
IDEFI	SAMSEI	Teaching program; Digital simulation; Immersive & participatory learning.
IDEFI	UTOP	Modular distance-learning courses turned towards technology-based jobs, giving rise, or not, to

CALL FOR PROPOSALS
I-SITE WAVE 2

SELECTION PHASE

ULNE

AMENDED PROJECT

		qualifications or diplomas.
SATT Fance Valo	Nord	Technology Transfer Office (TTO), TT investment fund, Technology Transfer.

Strategic projects of the Initiative

Tab. E. - Impacts of the PIA projects

PIA projects	Key developmental impacts	Synergies with the partners external to the Initiative	Other contributions of the project to the Initiative	Any enhancement of the project potential by the Initiative
DISTALZ LABEX	<p>Gather the existing world leaders in basic and clinical research.</p> <p>Allow basic, clinical, social and healthcare researchers to interact.</p> <p>Catalyze research activities on ethics, genomics, medicine, cellular and structural biology.</p>	<p>Attract leaders in France and Europe.</p> <p>Favor private-academic interactions.</p> <p>Create a new excellence Center in Neurodegenerative Disease Research (LiCEND).</p>	<p>Educate budding scientists in neurodegenerative disease research.</p> <p>Promote young researchers.</p> <p>Help Initiative's scientific publication impact to its goals.</p>	<p>Leverage the structuring effect of the Labex by offering a long-term support both in term of number of persons concerned and fundings.</p> <p>Prepare to the future challenges of treatments in Alzheimer disease.</p>
EGID LABEX	<p>EGID Research Federation creation in 2012, "Fédération Hospitalo-Universitaire" INTEGRA</p> <p>Platforms: immunophenotyping, animal facility, immunometabolism</p> <p>EGID Thematic School, Diabetes/obesity in the Master</p>	<p>Major industrial contract (2 000 000 €).</p> <p>Spin-off « Precigenics ».</p>	<p>Attractiveness: integration of 3 new teams in 2016</p>	<p>Platforms support and renewal.</p> <p>Pursue of a scientific Work package.</p> <p>Attractiveness measures for students and Ph.D.</p>

CALL FOR PROPOSALS
I-SITE WAVE 2

ULNE

SELECTION PHASE

AMENDED PROJECT

	Degree Biology/Health.			
PARAFRAP LABEX	Federate a currently scattered French parasitology scientific community. Improve international visibility of the French parasitology scientific community. Carry out implementation of and participation to technology platforms.	Attract other young French leaders in our national network. Recruit excellent foreign postdocs. Favor private-academic interactions. Create an international biannual meeting of parasitology.	Educate ~twenty Ph.D. students to parasitology. Promote young researchers (Ph.D., Postdoc and new PIs).	Increase interaction between different fields of parasitology in France.
Imaginex BioMed EQUIPEX	Offers services for 320 users and 112 Research Teams as well as for the private sector. Platform of 70 systems for imaging in photonic, near-field, electronic microscopies, for flow imaging and cytometry, and for high content screening. IOS certification.	The Equipex is used as a platform for the Life Science & Medicine Labex as well as for ONCOLILLE (Cancer) and Center for Neurodegenerative illnesses CNM-LICEND. Industrial contracts have been established mainly through the R&D Research Teams that support the activity of this EQUIPEX.	In the framework of the I-SITE, the project proposes a synergistic interaction with Equipex ExCELSiOR in order to constitute a worldwide leader in near-field nanotechnologies.	The scientific and technological developments achieved sustain and support emerging activities linked to startup and spin-off as well as for SMEs and big industries in the Pharma, food and Biotech sectors.

CALL FOR PROPOSALS
I-SITE WAVE 2

ULNE

SELECTION PHASE

AMENDED PROJECT

LIGAN-PM EQUIPEX	Federates Lille activities on genomics by offering a single platform. Consortium with Institut Pasteur de Lille and private company.	Consortium Agreement with company Genoscreen. Collaborative work with Imperial College London.	Development of precision medicine. Contributes to reinforce public-private partnerships.	Improve support and visibility for research activities
PRECINASH RHU	Structuration of current excellence forces in metabolic diseases: Labex EGID, Equipex Ligan, FHU integra, CRHU Lille	CHRU Lille. Collaboration with Sanofi.	An unprecedented number of liver and serum samples, already collected from a cohort of > 1000 patients covering the full spectrum of disease progression, from normal liver to Non-alcoholic steatohepatitis (NASH).	The project has started in 2016 and sustains the I-SITE scientific excellence in the domain.
ICST LABEX	Formation of a national scientific & technological network. The project also involves 4 French universities working on development of an International Masters course.	The laboratories in the ICST network have developed collaborations with European partners (European Network of Excellence) and a Marie Curie project is underway.	The number of patents has increased significantly, with one Start Up created and a second under development. The ICST project has enabled us to gain new national, European and international contracts (ANR, INCA, international ANRs, Marie Curie, Human Frontiers is on-going).	The ICST project has led to the obtaining of new national, European and international contracts (ANR, INCA, international ANRs, Marie Curie, Human Frontiers is on-going).
ICEBERG BIOINFORMATIQ UE	Increase of national and international visibility of Lille in Bioinformatics.	Create new collaborations with partners such as INRIA, Le Chesnay & Paris Diderot.	This project brings new skills in emerging areas of control of the cell and the biology of synthesis.	Sustain of the initiative within I-SITE as part of its excellence domains.

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ULNE

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AMENDED PROJECT

CAPPA LABEX	Creation of a strong regional network by federating 7 laboratories with specific skills and complementary expertise. CaPPA is a driving force to bring new proposals at national and international level.	Creation of an international Master 2 in Atmospheric Environment (M2AE) with teachers from Lille University, Université du Littoral Côte d'Opale (ULCO) & Mines Douai.	Strengthen the internationalization of the education program.	Extend the scientific objectives by federating new laboratories within the I-SITE.
REALCAT EQUIPEX	Linked with IFMAS & PIVERT ITEs. New catalysts, materials, chemicals and equipment. Interdisciplinarity: Chemistry + Biotechnology + Mathematics	National and International academic and industrial contracts. AVANTIUM, NL, as a premium partner for implementation.	Creation of the TEAMCAT Solutions startup. Students' education. One-of-a-kind Technological and Scientific showcase. Innovation potential.	Effect of the 'Open innovation and teaching platforms'. Support for the 'hybrid catalysis' concept. Keeping a state-of-the-art equipment offer. Support for the elaboration of the UPCAT downstream platform.
IFMAS ITE	Support towards the development of a top-level industrial sector in plant chemistry, ranging from plants to bio-sourced products. Creation of a research institute comprising six R&D laboratories covering 2400 m ² , working on synthesis,	Balanced public-private partnership. Purchase of shares by ten shareholders (Florimond Desprez, Roquette, Mäder, Ma-tikem, Lille University, Mines Douai, CNRS, INRA, ENSCL, Université d'Artois) Setting-up of an agreement	Drawing up of a technological roadmap per three-year period. Setting-up of a strategic orientation committee made up of researchers for the structuring of actions within the framework of the roadmap. Financial leverage for R&D projects as a part of an annual IFMAS call for proposals.	Research-based training for 20 to 25 Ph.D./post-docs/research engineers per three-year period. Exploitation of research results and shared risk-taking. Sharing of intellectual property and patent filing.

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	<p>polymerization, analysis, characterization and formulation.</p> <p>Development of a community of public and private researchers in the field of plant chemistry and bio-sourced materials.</p>	<p>between partners.</p> <p>Opening up to other economic and academic actors in France and in Europe.</p>	<p>Development of a service offer for R&D shared with partners.</p>	
ROCK EQUIPEX	<p>The EQUIPEX has enabled a structuring of the French "Heterogeneous Catalysis" community through the work of the project leader, which has been validated by being awarded with GdR 3590.</p>	<p>Reinforced partnership with SOLEIL synchrotron facility; access to numerous complementary experiments. Development of new experiments (RAXR, RIXS) and experimental approaches. Ph.D. cofinanced by Lille University - SOLEIL began September 2014.</p>	<p>Participation of SOLEIL in the candidature of the ASC Master within the EMJMD program of the EU. Program funded since July 2015. Involvement of SOLEIL in the specialty teaching within the ASC Master.</p>	<p>Support for the development of innovative methods for treating and modelling data. Support for the setting-up of the sustainable 'Synchrotron Catalysis and Radiation' platform, with SOLEIL.</p>
PIVERT ITE	<p>A 'Bioeconomy' initiative, ultra-integrated into education, R&D and Valorization by a set of high level actions including the IFMAS ITE, PCRD7 EuroBioRef, REALCAT EQUIPEX, mirror site of E2P2L and LIA CAT&P4BIO.</p>	<p>Collaborative project involving many academic partners for pre-competitive research, results of which are valorized via a dedicated industrial network.</p>	<p>Establishment of common education programs with great potential for economic benefits (scaling up and commercialization of solutions developed from the lab scale).</p>	<p>Open innovation and teaching platforms' in synergy with REALCAT; support for the concept of hybrid catalysis; support of the UPCAT platform (which will back up the BIOGIS demo plant of PIVERT).</p>

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MIRE RSNR	8 academic partners (6 laboratories, 4 universities) & industrial partners (IRSN, EDF, AREVA). Complementary fundamental & experimental knowledge. Shared research themes.	Reinforcement of partnerships between different teams. Teaching component (Master). Development of new actions. Collaborative publications.	Collaborations with large industrial groups. Structuring effect in the nuclear sector.	National and international visibility. Appeal and broadening of partnerships concerning nuclear safety.
CEMPI LABEX	The interaction between mathematics and the physics, at the heart of CEMPI, has become one of the domains of excellence of the university.	Collaboration with the Fédération de Recherche Mathématique du Nord-Pas de Calais (Université d'Artois, du Littoral Côte d'Opale, de Valenciennes et du Hainaut Cambrésis).	Development of interdisciplinary research physics-biology-mathematics and mathematics-computer science.	The principal actions of CEMPI (masters and Ph.D. fellowships, postdoctoral program, interdisciplinary research projects, international network building) will be amplified and then extended beyond the closing date of CEMPI thanks to the I-SITE funding.
ExCELSIOR EQUIPEX	Open access to academic and industrial research teams of high class nano-characterization platform.	ExCELSIOR arouses numerous interactions with French and European large companies and research institutes in the field of nano-electronics.	Interdisciplinary researches between ExCELSIOR and ImagInEx BioMed EQUIPEX are on-going.	Researches between the two EQUIPEX 'ExCELSIOR' et 'ImagInEx BioMed' will be enlarged in the near future thanks to interdisciplinary interests and instruments complementarity.

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<p>FLUX EQUIPEX</p>	<p>An outstanding fiber facilities center unique in France and world class. Brings high technologies on the French and international level for academics and industrials (fiber lasers, medical, THz applications).</p>	<p>Creation of common research laboratories: Prysmian, world leader in optical cables, and CEA CESTA of Bordeaux. Numerous collaborations with university (France , Europe, USA, China).</p>	<p>Industrial collaborations in the Hauts-de-France Region: Prysmian (Pas-de-Calais), Indelec et Genes Diffusion (Douai), MC2 et Horiba scientifique (Villeneuve d'Ascq), ASN Calais. More than 2000 employees in these companies.</p>	<p>Improvement of all the links with the companies with creation of additional common laboratories, contract and the creation of start-up.</p>
<p>IRDIVE EQUIPEX</p>	<p>IRDIVE EQUIPEX represents an innovative platform to develop researches in the field of Visual and Cultures Sciences, with 100 researchers from 5 CNRS laboratories (SCA lab, IRHIS, STL, Cristal, Painlevé) and 1 EA (CEAC) collaborating on interdisciplinary projects.</p>	<p>A strong collaboration with the laboratory LISIC (EA) from the Université du Littoral Côte d'Opale.</p>	<p>The Equipex hosts renowned researchers and contributes to the development of scientific attractiveness of the site. The Equipex also hosts master students and as such supports Master of excellence proposed by the Initiative (open Masters, European joint Masters).</p>	<p>The Equipex will strongly benefit from the Initiative through calls for proposals and associated personal supports.</p>
<p>LEAF EQUIPEX</p>	<p>Structuration of a flagship project on 'High Performance Flexible Electronics' at the heart of the scientific project of LEAF. 51 Journal publications, 76 Conference presentation and 6 patents.</p>	<p>LEAF involves two contractual partners (IEMN Lille and LAAS Toulouse). LEAF has generated and is contributing to two industrial common laboratories with STmicroelectronics and Essilor.</p>	<p>Structuration of high level research and of advanced technological platforms that contributes to the impact and visibility of the I-SITE.</p>	<p>Support to the technological platforms. In particular, permanent technical number of persons concerned devoted to the operation and maintenance of EQUIPEX technical platforms.</p>

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GANEX LABEX	The GANEX LABEX has 3 components: industry, research & education, the last of which constitutes an entire Work-Package in itself, and within which are organized thematic schools. Among these, courses proposed within the partner establishments may have a structuring effect.	Among the exterior partners of the Initiative are significant players in the energy sector which may benefit from results from the GANEX LABEX in the field of power components & DC-DC converters.	Contribution of IRCICA research consortium will strengthen the competitiveness, of the laboratories of research and development and the French industries, in the field of converters for the electric vehicles.	Following the partnership developed within GANEX, a fast increase of the industrial activity connected to GaN (diodes, lasers, electronic components...) and strong diversification of research on GaN (knowledge, material) will be developed and will benefit to the industrial companies and the society.
FIT EQUIPEX	FIT enables experiments on robots and sensor networks which enable the validation of research around IoT, cloud systems and the study of radio propagation, and the structuring of further works.	The platform is open to all, which enables people from outside to use it and exchange with the Initiative's partners.	FIT enables to validate many of the project's results in a real environment. This means proof of concept can be obtained more quickly.	Through the Initiative and the tests carried out on the platform, the community of FIT users can increase and contribute to its development. Likewise, these new users can identify new needs and shortfalls in the program, enabling its improvement.
REFIMEVE+ EQUIPEX	Distribution to the Lille node (and throughout France) of an ultra-stable frequency generated at the Observatoire de Paris through RENATER benefits to time/frequency	Existing relations of the university laboratories with several partners in the REFIMEVE network will be reinforced & broadened: FEMTO-ST, LPL, LiPhy,...	The extension of the REFIMEVE network is currently under way to build a European-wide network: a link with the German network has been tested and UK network will be the next partner. A coupling with the	Following the partnership developed within REFIMEVE+ national consortium, and the future building of a European network, an important

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	metrology, fundamental physics, high precision spectroscopy applied to atmospheric physics. Strong integration into the national Optical Measurement community in the field of Optics and Metrology, concerning both research & teaching aspects.	among academic partners, Keopsys or mu-Quans among industrial partners.	DANTE initiative is also expected.	increase of the number of ANR and H2020 projects is expected.
ADICODE IDEFI	Set up of project-based learning including co-design methodologies and transdisciplinary Support of innovation projects from industry and innovative startup initiatives. Set up of "co-design and collective intelligence" research team.	Creation of a consortium with external academic partners in 2013: ICL (Institut Catholique de Lille), ICAM Lille, RUBIKA SAS – ISD, ENSAP, CNRS et Lille University for the IEMN (Institut d'Electronique, de Microélectronique et de Nanotechnologie).	Part of MOSAIC network dedicated to innovation and collective intelligence (HEC Montreal, University of Barcelona, Aalto University, Université de Liège, Université de Louvain la Neuve, École Centrale de Lyon, École des Mines de Paris).	Training of 500 students per year (to be reached in 2017) on the basis of 100 innovation projects per year. Possibilities of continuous education. Transfer of methods to other academic institutions.
FINMINA IDEFI	Setting-up of a top-level, trans-disciplinary, modular training course adapted to the different stages of learning - from primary to higher education.	Based on a structured national network, this project also aims at providing a national continuing education offer in a sector where technological innovation is permanent.	Sharing of high technology training infrastructures, whose costs do not allow for duplication.	Dissemination of information, broadening of the target, new opportunities in continuing education.

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<p>REMIS IDEFI</p>	<p>Sharing of expertise of research teams from a number of establishments in the region: Cristal/ Lille2: EA 2694, EA 4483/ UVHC: LAMIH/INSERM: CIC-IT 1403 within a living lab dedicated to the sick and chronic illnesses at home.</p>	<p>Involvement of partners from civil society and from economic and charity circles: APF, Santelys, CHRU Lille, Crédit Mutuel Nord Europe, Sauvegarde du Nord, Johnson and Johnson.</p>	<p>Development of interdisciplinary research between health sciences, technological sciences and social sciences.</p>	<p>Creation of a living lab.</p>
<p>SATT France Valo</p>	<p>Focusing on existing or emerging excellence themes. Fosters the identification of technology “maturing” opportunities. Offers a frame for building a strategic IP (Intellectual Property).</p>	<p>“Maturing” technologies for Université d’Artois, ULCO, UVHC, FUPL, CHRU Lille, Centre Oscar Lambret, Institut Pasteur de Lille. Involvement in the steering committee of the Regional Innovation Strategy.</p>	<p>Research & Valorization: Supporting teams focused on key technologies and financing their technological development. Contributing to intelligence and prospective studies with respect to IP. Contributing to the Front Office for enterprises. Supporting I-SITE with respect to technological platforms (studies, engineering, and business development).</p>	<p>Supporting excellence teams from research to technology transfer will foster the development of « patent factories » (i.e. teams producing patent pools) on key technologies, such patent pools magnifying the licensing potential of these technologies towards multiples applications.</p>

1.3 STRENGTHS AND WEAKNESSES

Structuring, integration and governance

Towards a common destiny

This Initiative is supported by an ambitious transformation process and momentum to create the **University Lille Nord-Europe (ULNE)**. This world-class University will integrate Lille University, the “Grandes Écoles”, the Lille Regional Teaching University Hospital and the Institut Pasteur de Lille. Such transformation process has been set in motion with tangible and irreversible actions already implemented.

An irreversible process to enhance institutional cohesion and visibility

The landscape in higher education and research in Lille is undergoing significant changes and reorganization. In particular, major institutional steps towards greater coordination and integration have been or are currently undertaken by the members of the consortium. In full compliance with the action plan agreed with the Ministry of Higher Education and Research in July 2015, the three Universities of Lille will formally merge into the single and integrated Lille University in January 2018. Centrale Lille, ENSCL and ENSAIT schools on the one side, and Télécom Lille and EMD schools on the other side, have also initiated their respective merging processes. The former merging is specified in their “Contrat d’établissement” signed by the Ministry in July 2015, and the latter one will be finalized in January 2017 with the creation of IMT Lille-Douai. These irreversible organizational changes are the first steps in reducing the institutional fragmentation of the higher education and research ecosystem in Lille and in improving global visibility towards the construction of a **large rankable research intensive University**. They build the bricks of the new ULNE, according to the international model of University.

Towards a unified policy and strategy

These reorganizations between the members of the consortium are complemented by common strategies and aims in research, education and valorization. The Schools and Lille University have signed a **partnership agreement** (June 2015) that will be updated during the I-SITE initiative as early as 2017. The first and major step has been the adoption of a **single common signature** for scientific publications and the principle of the doctorate programme under the “single banner” (October 2015) of the target University. In addition, the signatories agreed to share a set of responsibilities and policies to enhance international visibility and attractiveness: communication and coordination of research and training policies for Ph.D. Students. This process is implemented along with the close cooperation of the three national research organizations CNRS, INSERM and INRIA.

The challenges

These tangible actions demonstrate the motion set in order to better integrate the local research and higher education landscape. Considering the initial fragmentation and the “cultural state-of-mind” of French institutions, these evolutions are significant: from 14 institutions which lead to the transformation to just **8 institutions by 2018**. The consortium is aligned on a trajectory towards the building of ULNE. Nevertheless, the ultimate transformation steps will require major cultural and institutional changes that will represent strong challenges to be overcome. The members of the consortium are convinced of the necessity to pool their strengths together in order to forge their common destiny.

Research

Key figures regarding the consortium:

Number of academic staff: 3 750 (including 350 research staff from CNRS, INRIA and INSERM)

Peridex³: 34% of academic staff

Total number of Ph.D. students: 2 100

Number of Ph.D. students in the Peridex: 1 150

The scientific strengths and impact of the consortium rely on a strong **multidisciplinary** base encompassing mathematics, physics, chemistry, engineering and computer sciences, biology and medicine, as well as social sciences and humanities, all **transversally interacting**. This excellence is mapped along three pillars (Figure 1) based on the European Research & Innovation Strategies for smart specialization (RIS3).

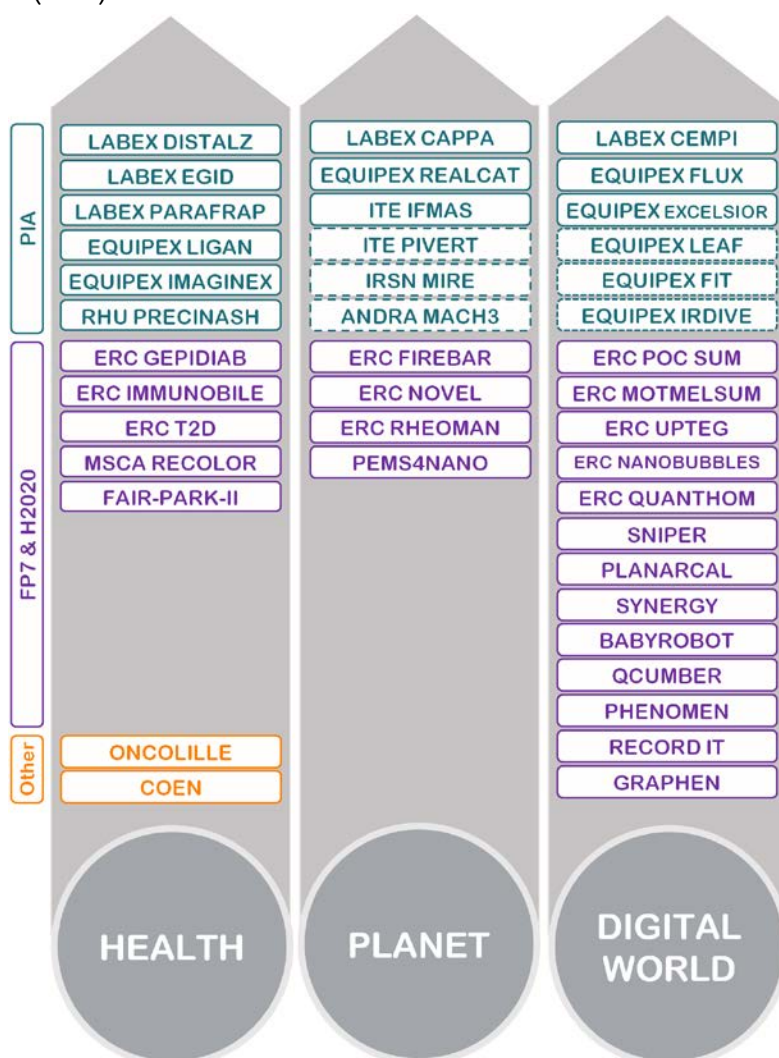
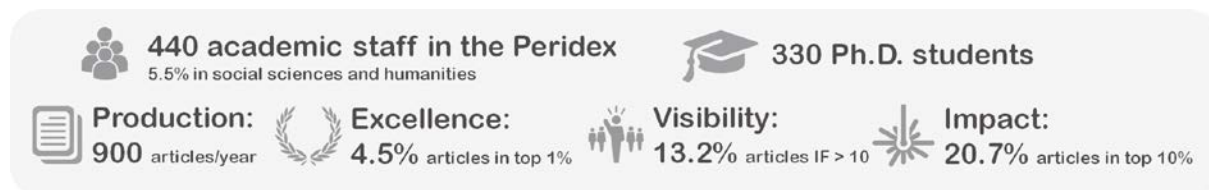


Figure 1: Mapping of the consortium excellence projects across thematic axes (dotted box: particularly remarkable actions with Lille as a partner)

³ Peridex: Personnel involved in coordinated PIA projects (LABEX, EQUIPEX, etc.) and ERC grants / IUF distinction, SIRIC, European projects (FP7, H2020).

Health



Development of **biomedical research** in Lille stems from its specific environment. High prevalence of cardiometabolic, neurodegenerative and inflammatory chronic disorders, as well as cancer in the Hauts-de-France Region explain the regional record of preventable premature mortality⁴, and motivated continued, long term research efforts aligned in these area. The consortium gathers world class strengths in **personalized medicine** for diabetes and metabolic diseases (Labex EGID, ERC GEPIDIAB, IMMUNOBILE and T2D), a transdisciplinary approach for Alzheimer disease (Labex DISTALZ), and tuberculosis (ERC INTRACELLTB) and parasitic diseases (Labex ParaFrap). Other research forces include highly recognized teams focusing on malignant tumor resistance and dormancy (SIRIC OncoLille), and chronic inflammation (LIRIC), and the *Research Center on Longevity and Healthy Aging* at the Pasteur Institute of Lille, a world-renowned center in biomedical research. This unique alliance in biomedical research integrates state-of-the art platforms (like Equipex LIGAN for genomic and Equipex IMAGINEX for cellular imaging). Another key asset of the consortium is **Lille Regional Teaching University Hospital (CHRU)**, the tertiary referral center for 4 million inhabitants and one of the largest Health Care institutions in Europe, consistently ranked as 1st or 2nd for clinical care in France, and as 4th for clinical research⁵. Together with a structured regional network for clinical research, it provides an ideal environment for developing ambitious translational projects, coordinate large international multicenter clinical trials (H2020 FAIRPARK for innovative treatment of Parkinson's disease), and/or assembling comprehensive collections gathering more than 500 000 human samples from ABOS (obesity), FREGAT (gastro-esophageal cancer) and 80 other ongoing clinical studies⁶. When consolidated, the publication track records of the consortium match those of much better ranked universities worldwide (ARWU). The lower current rank of each partner is a mechanical reflection of the lack of a homogenous and enforced policy regulating the scientific signature among them prior to 2015.

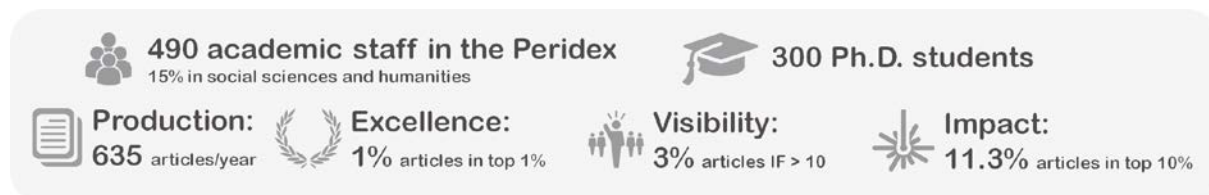
Success story: Innovative therapy for non-alcoholic steatohepatitis (NASH). NASH, already the leading cause of liver transplantation, is a major driver of liver-related and cardiovascular mortality. This « ticking time bomb » is now a recognized therapeutic target by regulatory authorities (FDA and EMA). Synergy between world-renowned academic expertise in nuclear receptors at Lille University and the pharmaceutical industry led to the creation of GENFIT in 1999 in the Eurasanté business park. This resulted in the development of Elafibranor, a drug which is currently in phase 3. Continuing translational research at the Labex EGID and CHRU, in partnership with SANOFI, was recently funded a RHU grant. RHU PRECINASH will extend the discovery of new targets and biomarkers for NASH and foster the development of approved drugs for NASH.

⁴ http://www.ars.nordpasdecalsais.sante.fr/fileadmin/NORD-PAS-DE-CALAIS/ARS_Actu/DSEE_-_Atlas_2015.pdf

⁵ <http://social-sante.gouv.fr/systeme-de-sante-et-medico-social/recherche-et-innovation/article/les-missions-d-enseignement-de-recherche-de-reference-et-d-innovation-merri>; <http://www.lepoint.fr/hopitaux/tableau-d-honneur.php>

⁶ <http://crb.chru-lille.fr/CatalogueBiobanque/index.html>

Planet

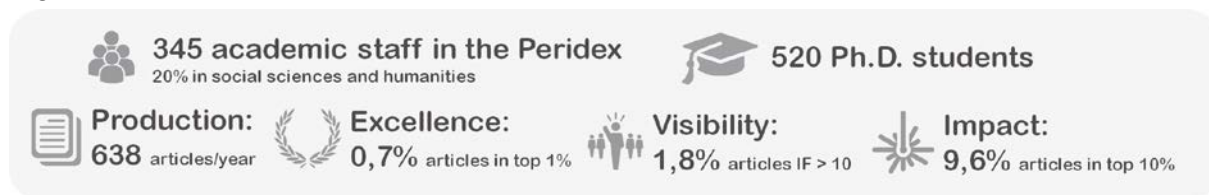


The Hauts-de-France Region is a pioneering region for the advent of the **Third Industrial Revolution (“REV3”)**. In this context, the consortium already possesses remarkable assets such as the coordination of the successful large scale European Project EUROBIOREF (FP7) for developing new multi-biomass, multi-technologies and multi-products biorefineries, the participation to the European EUBREN⁷ network, the EQUIPEX REALCAT, unique in the world for accelerating research on new **biobased (bio-)chemical processes**, and the coordination of/the participation to two Institutes for energy transition “IFMAS”, mainly dealing with starch-based biorefinery technologies, & “PIVERT”, mainly dealing with oil plants-based biorefinery technologies. This research on biomass advanced upgrading is also backed up by three LIAs (Japan/India/Brazil) and one UMI between CNRS and Solvay located in Shanghai, in which East China University, East China University in Science and Technology and Fudan University are also participating. In **Physics of the atmosphere**, the Labex CAPPa demonstrated that a pool of regional laboratories of excellence conduct high level scientific research in physics, chemistry, geoscience, engineering, biology and geography ensuring the consortium maintains an international visibility and recognition. I-SITE is a strong catalyst to structure a cluster of excellence around the theme of Physics of the atmosphere with a strong interdisciplinarity and networks of collaborations (including ADEME, ATMO, IFPEN, CNES, IRSN or Météo-France). Finally, the consortium is renowned in the field of **nuclear energy safety**, with, *e.g.*, participation to the IRSN MIRE project, as a response to the Fukushima accident, which is also studied by social science and humanities in the HRPD LIA involving Tokyo University, and an IUF grant for studying coordination chemistry of uranium in soils. In 2016, a Joint Research Lab was further created with AREVA, a nuclear industry leader. All the aforementioned activities are supported by a top level internationally recognized scientific research associated to cutting edge technological platforms. In the past 4 years, our community obtained 4 ERCs and 2 IUFs.

Success story: The EuroBioRef project (European Multilevel Integrated Biorefinery Design for Sustainable Biomass Processing). The project was a 4 years FP7 program (2010-2014) coordinated by UCCS team in Lille with the aim of developing next generation biorefineries. EuroBioRef had this unique feature of dealing with the entire process of transformation of biomass, from non-edible crops production to final commercial products. It involved 29 partners (industry, small and medium-sized enterprises, academics) from 15 different countries in a highly collaborative network. The project generated a tremendous amount of results, with an important impact on the European bioeconomy, including new energy & new chemicals production. The project generated 70+ scientific papers, 90+ new exploitable results or knowledge and 33 patents with, for examples, the launching of the TEAMCAT Solutions startup in Lille in 2015, and one full scale unit under construction in Norway.

⁷ European Biomass Research Network, <http://www.eubren.com/>

Digital world



The consortium brings together research teams of proven excellence in computer science, mathematics, physics, electronics and the cognitive sciences, as attested in particular by their participation in 1 Labex, 5 Equipex, 5 ERC and 8 European projects (including Graphene and Quantum Flagships). Specifically, a unique center of interdisciplinary expertise in Europe is deployed through the Labex CEMPI and 5 Equipex (Flux, LEAF, EXCELSIOR, FIT and IRDIVE) around which research is articulated within these fields and at their interface. Research in the consortium in the **Social Sciences and Humanities** shows important developments in the domain of technology-based approaches to cognition in which the interplay between technology and mental processes to study cognition is central. This interplay is investigated to create innovative tools to study cognitive processes, but also to quantify the effect of the techno-anthropologic relationship on cognition. Thanks to innovative technological platforms (Equipex IrDIVE, Brain imaging platform), this interplay is investigated in the domains of perception and action (MSCA PACE, 1 IUF), semantic processes, the dialectic between cognition and culture in relation to emotions in individual and collective behaviors, and their applications in health (Labex Distalz, SIRIC ONCOLille) and education. With the ambition to also model complex systems, the **mathematicians and physicists** of the interdisciplinary Labex CEMPI have developed, jointly or separately, trailblazing research in algebraic geometry, number theory and the geometry of groups (LABEX CEMPI, ERC MOTMELSUM, Bronze Medal CNRS-2015, ERC DiGGeS), in cold atom physics and in nonlinear optics (ERC Quantom, Equipex Flux, 2 IUF). With **biologists**, they deciphered the dynamics of complex optical and biological systems. Our research has led to excellent results in both theoretical and applied statistics, in particular in the domain of big data, substantiated by the development of high performance software, and numerous interdisciplinary and industrial collaborations (ArcelorMittal). In nanotechnology, researchers of the consortium have developed, over the last five years, a unique expertise for the development of nanodevices for future autonomous systems (Equipex Leaf, ERC UPTEx, joint laboratory IEMN/ST-M and RS2E network). As an example of a flagship result, we can mention the fifty-fold increase in battery energy density obtained without any size increase, thus opening the road to new applications for autonomous and nomad compact systems.

Success story: The THz frequency features capabilities not yet covered by optical or microwaves domains. At Lille University, epitaxial growth of semiconductors leads to the best performances in the world. Synergy with the fiber facilities paves the way for the fabrication of arrays of THz emitters, highly sensitive detectors and antennas constituting a full THz chain not available elsewhere. This excellence enables tremendous increase in the data rate in wireless communication (introducing TiFi instead of WiFi or LiFi) in collaboration with Thales (Nature Photonics 2016) and improves visual devices that can see through the walls now exploited with the start-up MC2 Technologies (<http://www.mc2-technologies.com/>). This full THz chain opens the way to a new technology highway for the industry.

Higher education and lifelong training

Key figures regarding the consortium:

Number of students: 74 K (including 7 630 students from "Grandes Écoles")

Distribution: 64% undergraduate, 23% Master, 10.3% in "Grandes Écoles" and 2.7% Ph.D.

Highlight: 85% of students in "Grandes Écoles" come from other French regions or from abroad

The overall education strategy and student life have long been a common goal. This has been the subject of coordination actions and engagement that are part of existing partnership agreements among most of the members of the consortium. Long standing blended research teams have naturally led to blended pedagogical teams and master cohorts. Since 2012, all the students benefit from a single student card giving them access to common resources like libraries, University restaurants and learning centers. Resolutely forward looking, the consortium and the external partners have recently redesigned a significant part of its learning spaces such as the ADICODE spaces (IDEFI, FUPL) and the recently inaugurated hi-tech "LILLIAD" innovation learning center that offers state-of-the-art environment and resources, adapted to new teaching, learning and research practices by making significant use of digital solutions.

Upstream, access to higher education for students from disadvantaged background is also a great concern. Specific programs (such as the PREEL "Programme régional de Réussite en Études Longues" supported by the Regional Council) have been initiated to encourage such students to engage in higher education. Sciences Po Lille was a forerunner with its program Scientific PEI "Programme d'Études Intégrées" which is today the most important of the kind in France. Downstream, the consortium and the external partners support and offer academic recognition to student entrepreneurship: thanks to the "Hubhouse network", created in 2011, the Hauts-de-France Region has become a pioneer in that field. Today, the "PEPITE Lille Nord de France" (PIA program) is ranked second in France in the number of registered students. This effective collaboration provides today strong foundations and experience to a forthcoming sustained, expanded and unified vision of higher education beyond today's *ad hoc* coordination. This vision relies on the four following pillars.

Acknowledged high quality master programs

The high quality of the consortium's masters programs (including the "Grandes École" courses equivalent to a master level) results first from their close links with both the carried out research and the business community needs. Selectivity is also a key point towards excellence. Contrary to the common misconception, the "Grandes Écoles" are not the only ones to propose selective programs: 85 selective programs are offered to students with high potential. In addition, students from the "Grandes Écoles" have the opportunity to enroll for a master degree alongside their main course. In the end, the insertion rate of our master students is 90% (the national average is 89%), more than 60% of our engineers are employed before graduation (30% at the national level) and 92% after 4 months. In 2015, 27% of the master-graduated students and 8% of the engineers enrolled for a Ph.D. This percentage increases to 60% for master students in Sciences and Technology.

Reinforcing a common doctoral program

The doctoral program is carried out within 6 regional doctoral schools co-accredited between members of the COMUE Lille Nord de France among which Lille University and the "Grandes Écoles". The doctoral schools select Ph.D. candidates, propose specific courses for Ph.D. students and validate the jury for their defense. However, an ambitious Ph.D. program must be set up by the consortium to gain visibility and increase the number of awarded Ph.D. in particular by identifying and attracting high level

French and international candidates before the doctoral programme as well as by creating a breeding ground for doctoral education.

Embedded culture of innovation in teaching and learning

The consortium and the external partners have developed a culture of innovation in teaching, by proposing novel trainings and actions to raise awareness of entrepreneurship and innovation thanks to its highly engaged teaching staff. This can be illustrated through a few examples (non-comprehensive list): PRESAGE, created in 2012, was the first center in France dedicated to learning medical procedures ("never for the first time on a patient"). The IDEFI ADICODE (FUPL) promotes the development of co-elaborative working processes thus breaking silos between academic fields. The MOOC "Project Management" (Centrale Lille) was the first French MOOC with certificates. With 130 000 enrolled attendees, it is still today the most popular French MOOC. Teams specializing in innovation in teaching and multi-media resources work across the different sites of the consortium. They provide access to pedagogical scientific equipment and teaching materials and contribute to the development of a policy aimed at stimulating the use of new technologies and innovative teaching methods and developing the necessary tools in collaboration with national partners⁸. In addition, "creative challenges" are organized aiming at developing students' creativity and their problem-solving abilities to real challenges proposed by private companies⁹. The collaboration and coordination between all these teams needs to be reinforced and coordinated to generate a full synergy.

A leading position in lifelong learning

The consortium is pioneering at the National level in training and education in the field of life-long learning representing 18 M€ turnover per year. This position is an excellent illustration of the social role fulfilled by the consortium in terms of training towards a population facing a higher than national average structural unemployment rate. It is also an excellent opportunity to build upon as a leverage support for the local population as the socio-economic environment evolves. Sciences Po Lille was a forerunner with its program PEI, which is today the most important of the kind in France.

The success of lifelong training relies on the efficient organization of the consortium. In particular, the introduction of training modules to accommodate the wide profiles represented by FTLV students contributed to improve accessibility for professionals, distant learners, part time students. Such leadership has enabled the forging of close links with several hundred national and international businesses that also contribute to initial training programs. Further development of lifelong learning, through the integration of innovative learning resources and methods, as well as offering easy access to knowledge and information through networks of digital archives, is a priority of the consortium. Télécom Lille, which pioneered e-learning within the consortium and developed the TutTelNel distant learning method, as well as the Open University and the Post University Center of KU Leuven already constitute strong foundations for further developments in this field.

⁸ UNIT, UVED, UNF3S, UOH. Lille University is leading the national network Université des Sciences en Ligne (UNISCIEL).

⁹ <https://www.univ-lille3.fr/actualites/?actu=14517>

Results exploitation and socio-economic partnerships

A powerful territorial ecosystem for knowledge valorisation and technology transfer

At the heart of Europe, the Lille regional valorisation ecosystem is especially recognized in France for **healthcare** (the largest University Hospital in France is based in Lille), and **Tech** (Lille awarded in 2014 the national mark of approval "FrenchTech") and promotes the **chemical sector** (highlighted by the current Eura Industry Innov' program and REV3¹⁰). These territorial strengths are taken into account in the Metropolitan strategy as well as in the design of the Regional Innovation Smart Specialization Strategy (RIS3) by selecting the "Health and Nutrition", "Chemistry, Materials, Recycling" and "Digital Picture and Creative Industries" strategic domains as priorities (Figure 2, with Health, Planet, and Digital World, respectively). These three economic sectors are the **structuring framework** of the research activities

conducted by the consortium, highlighted by the strategic partnerships set up with leading companies in these sectors. The consortium's strong links with its cultural and socio-economic environment are notably ensured by the presence of a high number of socio-economic actors in University bodies together with staff representatives. These stakeholders include national and international businesses, banks and financial institutions, local authorities and various regional institutions, professional and advisory bodies, cultural institutions.

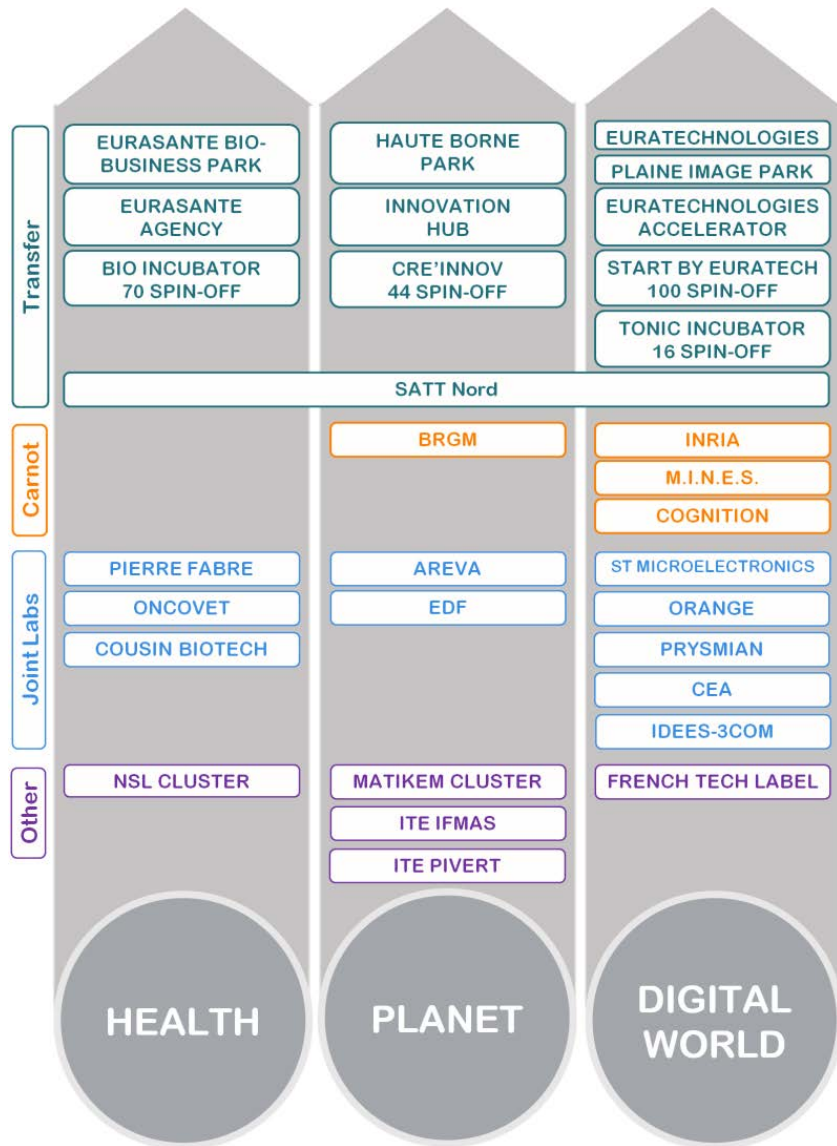


Figure 2: Overview of regional tools for valorization in three structuring economic sectors

¹⁰ <http://rev3.fr/>

Key figures regarding the consortium:

Number of technology transfer initiatives: 4 Science Parks, 5 incubators and 2 accelerators, 7 clusters covering as many economic sectors, 2 Energy Transition Institutes, 6 platforms, 4 Carnot Institutes, 1 Institute for Technological Research (IRT) dedicated to rail transport research and innovation, 10 Joint Research laboratories and 230 spin-off creations during the last 15 years.

Number and types of patents: 720, of which 598 are international, split across 140 patent families

Funding received from companies in the 3 structuring economic sectors (2012-2015): 78 577 K euros (c.f. Table F - financial of the socioeconomic partners)

Valorization and partnership in Pathology, Nutrition, Health Technology

The local health sector is a key element of the regional economy, which is the third-largest healthcare hub in France. The **Eurasanté Bio-business Park** is located at the heart of the leading Teaching University Hospital campus in Europe (CHRU of Lille: 7 hospitals, 15 000 professionals, 12 000 students, 1.4 million patients per year). In this site of excellence, more than 160 companies (including AlzProtect, Bayer HealthCare, Genfit and LFB) and 3 000 people operate in the fields of biotechnology, nutrition and metabolic diseases, health IT, medical devices, hospital engineering. The **Eurasanté agency** is a development agency dedicated to tech transfer and business development specifically in the life sciences sector, helping researchers, start-ups and companies with their development projects. The agency works in close collaboration with the **Eurasanté Bio incubator**, which is a real driver of innovation and offers priority access to scientific experts and assists growing companies with their first steps towards success (so far, 70 companies created, 120 projects supported, 400 jobs created). In collaboration with Eurasanté, the **Nutrition Health Longevity cluster**, the **Clubster Santé**, and the **platforms** in biology, biotechnology and nutrition as well as **international business events** (BioFIT, MedFIT, AgeingFIT and Nutrevent) stimulate and support collaborative research between private companies and academic laboratories at the interface between nutrition and health. Joint research activities currently conducted in **Joint Research Labs** between the consortium and the private sector contribute to the structuring of the partnership in the health sector, in particular those established with the renowned companies Cousin Biotech, Oncovet Clinical Research and Pierre Fabre Laboratories (French multinational pharmaceutical and cosmetic company).

Valorization and partnership in Environment, Natural resources, Energy, Chemistry

The **Haute Borne Park** (159 companies, 7 000 people) is a territorial initiative located next to Lille University that supports the tech transfer and valorisation (**Innovation hub**). The **Cre'Innov academic incubator** created by Lille University is supporting researchers and students in the development of projects related to sciences and technology (so far, 44 companies created). Within the regional framework of the RIS3, Cre'Innov is the reference structure for projects belonging to the "Chemistry, Materials, Recycling" strategic domain. At the same location, the **Matikem cluster** and **platforms** support collaborative innovation projects in Materials, Chemistry and Green Chemistry from their launching to obtain the necessary funding and facilitate the market launch of new products, services and/or processes. The consortium has **Joint Research Labs** including the AREVA-NC lab in collaboration with AREVA, aiming at developing synergies on joint and innovative research projects in order to enhance the socio-economic impact. The **BRGM-Carnot Institute** implements partnership-based research with industrial sectors and companies in order to deliver innovative management solutions in different areas, including soils and subsoils, raw materials, water resources or the prevention of natural and environmental risks. Moreover, in 2019, the first **1200 MHz NMR** in France, and one of the 6 firsts worldwide, will be installed in Lille. Finally, The **VEREM program** aims at promoting a progressive clustering approach (TRL1~6) and at setting up a new organizational umbrella

framework for emerging and networking knowledge economy in the fields of new advanced materials and processes in Northern France, and, streamlined, the **Eura Industry Innov' program** aims at developing industrial clusters (TRL6~9) dedicated to the manufacturing of agro sourced products and materials. This latter will be achieved by dedicating specific land for an industrial on the Flandre - Plaine de la Lys territory (~30 km from Lille). Specific support will be given for the installation of new sustainable and innovative manufacturing plants, complying with ecological constraints of the local territory, as well as ensuring circular economy with already established companies.

Valorization and partnership in ICT, Micro and Nanotechnology, Creative industries

In the heart of Lille is a digital business hub, including the **EuraTechnologies Park** (encompassing 145 companies, 3 500 people, the European leading **EuraTechnologies** accelerator and the “**Start by Euratech**” incubator, with so far 100 companies created) which helps entrepreneurs, innovative brands, tech start-ups and companies get started and succeed in the global market through innovative and homemade accelerator and incubator programs. At the same location, the **INRIA tech transfer platform** developed in the framework of the **INRIA-Carnot Institute** contributes to accelerate start-up development by providing a permanent pool of engineers who can be easily mobilized on research or technology transfer contracts. To complete this toolbox for ICT technology transfer, the **INRIA Plateau** is a unique collaborative workspace developed by the consortium to provide demonstrations and research platforms. This demonstration area promotes interactions and continuous dialogue on digital innovation between the scientific and technological communities, the business world and society as a whole. In the same economic sector, **Plaine Images** (99 companies, 1 500 people) is another hub, which is dedicated to the development of creative industries including video games, animation, audio-visual projects, and serious games. The recent **Cognition-Carnot Institute** supports the development of new products and services by taking into account the cognitive dimension of Human. The consortium research and innovation activities are also valorised through strategic alliances and collaborations with the business world (40 companies) including **5 Joint Research Labs** currently established with Orange, Prysmian, ST Microelectronics, the Commissariat à l'Énergie Atomique et aux énergies alternatives (CEA) and the Idées-3com communication agency.

International Policy

The international policy currently being pursued by the members of the group aims at promoting the attractiveness of the consortium in the world. This policy supports the international deployment of the research, training and innovation activities, and encourages the international mobility of researchers and students (sending them abroad, receiving them from abroad, exchanging them, and recruiting them).

A consortium open to the world

The internationalization of the members can be illustrated by the following characteristics: bottom-up collaborative actions by the scientific community (numerous international collaborative publications), 450 permanent foreign researchers, lecturers and professors, 250 foreign guest researchers annually, welcoming 8 880 foreign students (12% of the student population of the consortium, slightly above the national average of 11.8% and up to 20% in “Grandes Écoles”), participation in more than 133 Erasmus programmes, 28 masters in English, 9 international licenses, 254 dual diplomas and several achievements to develop an international environment (“International Student Week” organized each year in November, the Lille Erasmus Student Network, Welcome Club, organization of summer schools, participation to the models of United Nations and “International Academy Of Lille”, which offers summer programs for languages). Moreover, an International Label is awarded in the context of excellence to distinguish outstanding students in degrees with international curricula. Once graduated,

up to 25% of “Grandes Écoles” students find their first job abroad. Significant efforts have been made to welcome and integrate foreign researchers, notably through the construction of the high-tech International Residence Hall REEFLEX, especially designed for foreign researchers, the organization of an annual welcome seminar for incoming Ph.D., the COMUE Euraxess service center, and the creation of the “Maison Internationale des Chercheurs de Lille” in 2017.

International alliances of excellence

The strategy for European and international cooperation is divided into two parts. On the one hand, the group maintains bilateral cooperation in research and/or training with prestigious foreign universities (notably with the universities of Tokyo, Uppsala, McGill, Bristol, Southern California and the Imperial College London in the **top 100 ARWU**) or strategic universities for the internationalization of the consortium in Northern Europe (including the universities of Leuven, Kent, Bristol, St Andrews and Muenster). In particular, these international collaborations can be illustrated with the numerous international laboratories of excellence deployed by the group worldwide: 3 CNRS Mirror Units (out of a total of six in France) in Asia, one with the University of Tokyo on microsystems and mechatronics in the field of ICT, 6 CNRS International Associated Laboratories (located in Italy, Russia, Japan, and India), including one in collaboration with the University of Rome “La Sapienza” on neurodegenerative diseases, 11 INRIA associated teams, 6 of which being located in the Northern Europe, 2 INSERM International Associated Laboratories, including one with the University of Southern California, 5 International Joint Laboratories (with the industry) and 5 International Research Consortia. On the other hand, the group is part of international networks of strategic collaboration, especially with universities in Northern Europe. In particular, Lille University participates in the creation of a **European North-West network** through a strategic agreement (procurement of large-scale scientific equipment, platforms, calls for proposals) signed with the universities of Ghent and Louvain. The network is strengthened by the participation of the University of Leuven in the I-SITE project as an external partner. The consortium has also **developed strategic networks in terms of geographical or thematic areas** (notably the M2E2S network with the universities of Louvain, Ghent, Liège and the Royal Institute of Technology, the TEMPUS network with KU Leuven, the Utrecht network, and the Healthy Aging, NEURON, EUBREN, Ghent-Lille-Louvain Cognitive Neuroscience or TIME networks).

Towards the smart internationalization of the consortium

The consortium must **structure existing international alliances** to support its smart future internationalization. It will increase attractiveness, stimulate student mobility (inspired by “Grandes Écoles” know-how), its pool of Ph.D. students and its potential for doctoral supervision. The consortium will exploit its exceptional geographical situation, which is also served by an extended transport network that puts it at the heart of North-West Europe. Thanks to the high-speed trains (TGV), Lille can easily be reached from any other city in France, from Brussels (33 min) and London (81 min) and from three major international airports in Europe: Roissy-Charles De Gaulle, Brussel Zaventem and Amsterdam Schiphol. Low cost air companies are also easily available through the close airport of Lesquin, Beauvais and Charleroi (Belgium). This **structuring framework** must be based on a strengthening of existing or developing alliances (bilateral or networks) with prestigious universities on the themes of excellence of the consortium and with renowned Northern Europe universities. The aim is to consolidate partnerships and to systematically guide them to a greater articulation between research and training and to play a leading role in the **creation of a European Campus (European Grouping of Territorial Cooperation EGTC)**. The strong partnership with the University of Leuven in the field of research and pedagogical innovation brings concrete and operative support to this strategy.

Students life

Quality of the students welcoming and students life has long been a major goal of the consortium. The students benefit from an exceptional transportation network. Once in Lille, the transport and mobility networks allow students to easily travel through the city and from one campus to the other **using "soft" mobility means and public transportation.**

Once on the campus, thanks to CROUS¹¹, the students benefit from easy and cheap access to University restaurants and University residences. Moreover, the consortium is supported by the "Operation Campus", which implements a series of innovative measures in favor of student life and student lodging on the University campus. Investments of 250 M€ have been made (i) in a new residence "Reeflex" offering international state-of-the-art facilities to students, (ii) in a Learning Centre "LILLIAD" (Figure 3) (inaugurated in November 2016) associating education-work and living spaces, and (iii) in the renovation and the building of sport facilities. Key facilities are provided to students, such as the **academic and research library of humanities and social sciences**, which offers access to outstanding research documentation in these fields and supports dissemination of scientific information to everyone through its open access portal. In addition, the **Library of Sciences Po Lille**, located at the heart of Lille with a permanent access to students (7 days a week), offers state-of-the-art research and work facilities for all the Lille students. Moreover, Lille offers students' access to the **Lille University Data Platform (PUDL)**, which supports quantitative research in humanities and social sciences. The PUDL is a component of PROGEDO, a particularly large National research infrastructure (TGIR) dedicated to the production and management of data in humanities and social sciences.



Figure 3: Brand new Lilliad Learning Center

The consortium's student sports facilities are of a high standard, which has contributed to overwhelming success in University sports competitions. Alumni from the consortium also participate to international competitions such as the last Olympic Games in Rio in 2016. Generally speaking, students in employment, student representatives, elite student athletes and students who are involved in the local community are offered a special status.

The consortium has also an ambitious policy for supporting disabled students, which includes a major convention on disabilities between Lille University and leading industrial groups (e.g., Thales) as well as the organization of a biennial event since 2015. Socially disadvantaged students and disabled students benefit from specific State-funded programmes known as "Cordées de la Réussite" and "Cordées de la Réussite Handicap", aimed at enforcing student transition from secondary school to the University.

¹¹ CROUS: Centre Régional des Œuvres Universitaires et Scolaires

In addition, Lille University organizes French language courses (FLEUR project¹², co-financed by the “Agence Universitaire de la Francophonie”) for student refugees.

Lille student **associative and entrepreneurship ecosystems** are booming with a number of active students’ associations. For instance, a very **high number of students (2nd region in France)** are enrolled in **PEPITE programs (entrepreneurship and innovation)** in the region and the Junior Enterprises from Centrale Lille, SKEMA and EDHEC are among the top 30 in France in 2016 (over 170). More generally, the Lille area provides students with an overall **exceptional social and cultural environment**¹³. The consortium makes a point of improving its extra-curricular offer to its students. Cultural, art and athletic activities are at the heart of this approach. Through its active cultural departments, the consortium organizes open-access events on its campuses and in the city (including public lectures by researchers or artists, scientific or art and cultural exhibitions and inter-University festivals featuring live shows or music).

Human resources management

The consortium employs around 7 000 staff members, including 3 750 academic staff and 3 250 support and administrative staff, all strongly involved in its development. In the recent years, the Hauts-de-France Region has enjoyed an **increase in the number of full-time researchers** recruited annually, thereby strengthening its national position. For example, 47 CNRS researchers were recruited during the 2010-2014 period and 28 INRIA researchers were hired since the creation of the INRIA Centre Lille – Nord Europe in 2008. Moreover, since 2012 the State has been funding extra permanent positions so as to enable the consortium to make up for this deficit.

The consortium recruits lecturers, professors and researchers both at the national and the internationally levels. The Hauts-de-France Region ranks first nationally with respect to the rate of foreign lecturers and professors within its universities. An increasingly proactive and open recruitment policy is being put into place in an ever-increasing range of domains¹⁴. The development of chairs in collaboration with research bodies and industry also bears witness to the opening up of the hiring policy. The consortium members have considerably strengthened their training and development programs for academic, support and administrative staff in the past years. The teaching training has been strongly reinforced through a common Lille University program promoting **innovative teaching methods**. A policy for **reduced teaching loads** for newly appointed lecturers or leaders of ambitious projects has been instigated, but is currently limited in scope due to a lack of sufficient funding. An insufficiently proactive hiring policy coupled with strict constraints on salaries in a strongly competitive international job market can partially explain the unsatisfactory international appeal of the consortium. In order to develop a culture of talent recognition, the consortium will **promote best practices in human resources** notably through a proactive global search for talent and through the formalization of open recruitment guidelines.

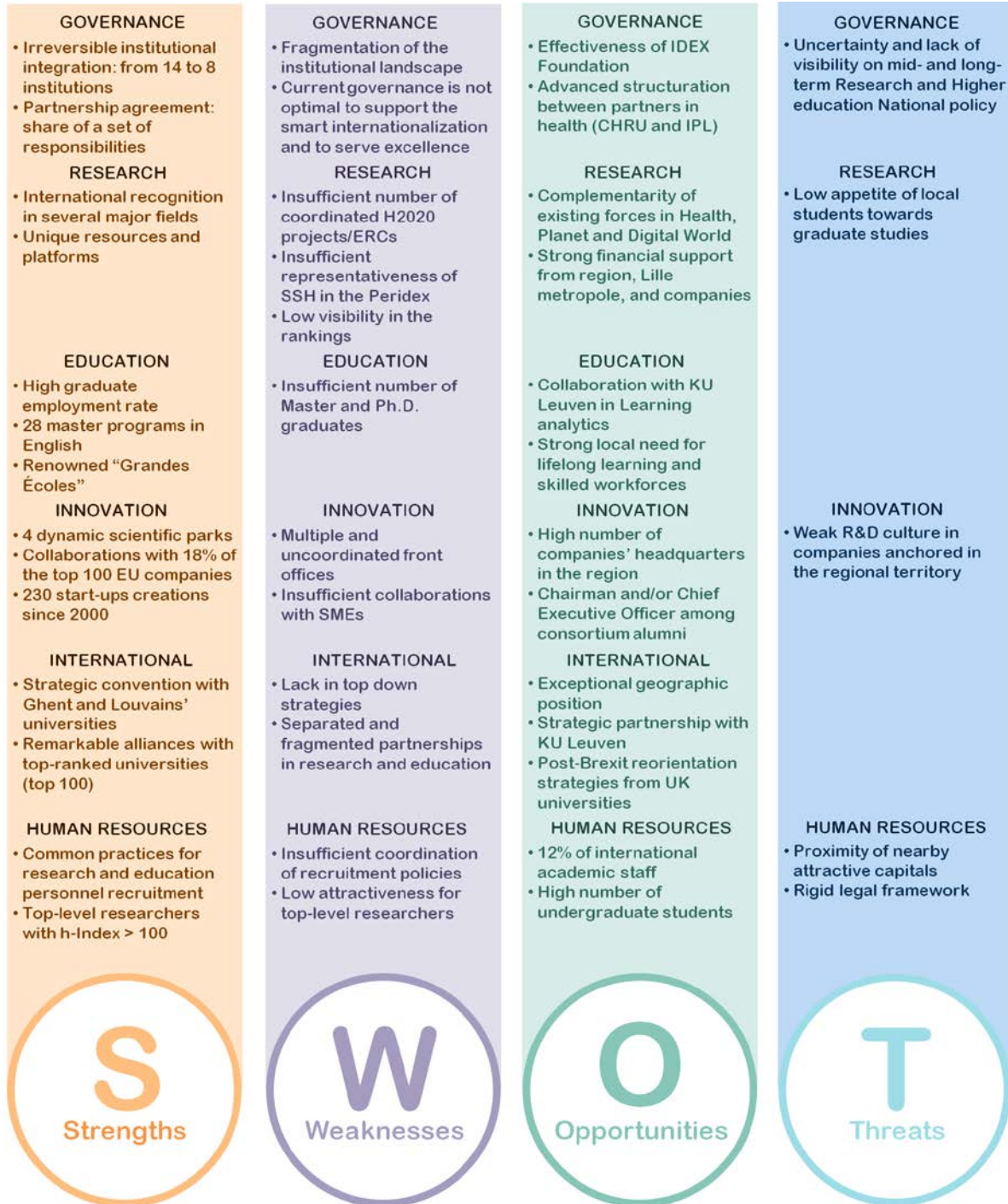
Finally, Lille University and the “Grandes Écoles” agreed (in 2015) to coordinate their research recruitment policies: the lab heads define the needs for recruitment with their teams and select the candidates, independently of the tutelle organization (University or “Grandes Écoles”).

¹² FLEUR: Français Langue Etrangère et Universitaire pour Réfugiés

¹³ Presence of important museums and cultural places such as Palais des Beaux-Arts, Lille Métropole Musée d’art moderne, d’art contemporain et d’art brut (LaM), Musée du Louvre-Lens, national theatres.

¹⁴ In the Region, the rate of internal recruitment for lecturers was 28.7% during the period 2004-2009. It was 23.8% for Lille University during the period 2010-2014 and 20% in 2014. The national rate in 2014 was 24%

Overall analysis of the consortium strengths and weaknesses



1.4 EXAMPLES OF PARTNERSHIPS

Tab. F. - Financial contributions of the socio-economic partners

Socio-economic sector	Pathology, Nutrition, Health Technology			
Research themes involved	NEUROSCIENCE, ONCOLOGY, METABOLIC DISEASE (including diabetes), INFLAMMATORY			
Partners	Names of the partners within this sector	Forms of partnership (framework agreement, contract, common laboratory, etc.)	Age of the partnerships	
	SANOFI	Research contract	5 to 10 years	
	PIERRE FABRE LABORATORIES	Joint laboratory	5 years	
Example of a flagship result or achievement	<ul style="list-style-type: none"> GENFIT created in the Eurasanté business park in 1999 and listed since 2006 on French stock market index CAC 40 (40 largest equities listed in France) is a biopharmaceutical company at the forefront of developing therapeutic and diagnostic solutions in metabolic and inflammatory diseases. Creation of the MDOLORIS start-up: valorization of the work of the Lille Clinical Investigation Centre for Innovative Technology. First worldwide company of continuous and non-invasive pain monitoring systems (sales in 58 countries). 			
Funding (including IP revenues) received from companies under these collaborations (K€)	2012	2013	2014	2015
	11 169	11 969	14 461	13 187

Socio-economic sector	Environment, Natural resources, Energy, Chemistry			
Research themes involved	CATALYSIS, ENVIRONMENT, ENERGY			
Partners	Names of the partners within this sector	Forms of partnership (framework agreement, contract, common laboratory, etc.)		Age of the partnerships
	AREVA	Common Laboratory	5 years	
	ROQUETTE	Research contract	5 to 10 years	
Example of a flagship result or achievement	<ul style="list-style-type: none"> • EUROBIOREF (coordination of the EU project involving 30 partners including: ARKEMA, MERCK, UMICORE, OLEON) • Creation of Joint Research Labs including the AREVA-NC lab in collaboration with AREVA 			
Funding (including IP revenues) received from companies under these collaborations (K€)	2012	2013	2014	2015
	3 299	3 313	6 354	5 104

Socio-economic sector	ICT, Micro and Nanotechnology, Creative industries			
Research themes involved	HUMAN MACHINE INTERACTION, MICRO-NANOTECHNOLOGY, HARDWARE & SOFTWARE			
Partners	Names of the partners within this sector	Forms of partnership (framework agreement, contract, common laboratory, etc.)	Age of the partnerships	
	THALES	Research Contract	5 years	
	ST MICRO	Common Lab	5 years	
Example of a flagship result or achievement	<ul style="list-style-type: none"> Start-up MC2 technologies (civil and military security applications) incubated in Haute Borne Park Coordination of H2020 « ColRobot » on the topic of collaborative robotics (https://www.colrobot.eu/) 5 Joint Research Labs currently established with Orange, Prysmian, ST Microelectronics, CEA and the Idées-3com 			
Funding (including IP revenues) received from companies under these collaborations (K€)	2012	2013	2014	2015
	4 260	1 582	1 521	2 358 ¹⁵

Tab. G. - Shares of contributions from the socio-economic partners

Year	2012	2013	2014	2015
Share of total funding received	59.92%	53.48%	61.49%	56.85%
Share of consolidated budget	2.39%	2.08%	3.07%	2.84%

¹⁵ Accounting for the increase of perimeter (vs. application of reference in 2015): yearly contribution 1.4 million euros from ENSAM Campus de Lille

Ambition of the Initiative

2.1 TARGET UNIVERSITY: UNIVERSITY LILLE NORD-EUROPE

The Excellence Initiative of University Lille Nord-Europe (I-SITE ULNE) has been designed as a powerful tool to transform the group with regards to its scientific, economic, social and territorial environment. The I-SITE ULNE project is based on an ambitious research and training programme, which structures and enhances the group's recognized areas of strength and its specific features, and takes up & overcomes identified challenges, in the view of building a new University model within the next decade: **University Lille-Nord Europe (ULNE)**. ULNE will include Lille University, "Grandes Écoles", the Regional University Hospital (CHRU) and Institut Pasteur de Lille (IPL), and will be built up around a reinforced partnership with three French research organisms, namely CNRS, INSERM and INRIA. ULNE aims at being ranked among **Europe's 50 leading reference universities** and at being distinguished at the highest international level.

The objective of the Initiative is to:

- Create a **world-class** University with a common brand that excels in all international ratings;
- Implement a University that integrates, in addition to Lille University and "Grandes Écoles", one of the largest Health Care institution in Europe and the largest in France (CHRU) and the world-class Institut Pasteur de Lille;
- Set a University that is seen as a **world reference** in terms of research and training in such areas of excellence as "Precision Human Health", "Science for a Changing Planet" and "Human-Friendly Digital World", thanks to an interdisciplinary model for the creation and transmission of knowledge implemented within highly visible and attractive Graduate Schools;
- Offer top quality hosting conditions and a highly **attractive environment of excellence**, intended to fuel the desire to learn among students, as well as entrepreneurship, and researcher creativity;
- Impose ULNE as a highly influential University in North-Western Europe with a determinedly global outlook that encourages **mobility (incoming and outgoing)** and develops wide-ranging strategic **partnerships (first with KU Leuven, Ghent, Louvain and further with UK, Dutch and Scandinavian Universities)** at the service of training, research and innovation;
- Ensure that ULNE is recognized as a **cutting-edge** University that intent on playing a key role in territorial development in a **partnership-based approach** with Regional public authorities, higher education and research institutions, as well as those actively involved in the socio-economic sphere.

I-SITE ULNE will provide the leverage required to facilitate the creation of, and drive, the ambition of the new University Lille Nord-Europe. It will be in charge of stimulating and assisting the consortium's transformation through actions aimed at achieving this objective:

- Creating three "**Hubs**" of **thematic excellence** with areas of concentration and circulation, promoting interdisciplinarity, in which training, research and cooperation with the socio-economic sphere and the public authorities are closely bound;
- Setting up **Graduate Schools (GS)** to promote interactions between research and training, starting with first year Bachelor Degrees (Introduction to Research Certificate) all the way up to integrated international Masters and Doctorate training programmes in relation with the socio-economic environment;

- Creating an **Educational & Digital Innovation Centre** to fully get to grips with the issues of educational development and the transformations fostered by digital technologies, and to give each student the means to be fully and actively in control of his/her training;
- Deploying strategic collaborations with the **socio-economic sphere**, not only in terms of research projects, but also with regard to training actions, on the model of the IDEFI ADICODE project in particular (Innovation & Co-design workshops);
- Setting up **Governance bodies** to steer the project according to the principles of **effectiveness and simplicity**.

2.2 AMBITION IN RESEARCH AND EDUCATION (HUBS & GRADUATE SCHOOLS)

In order to boost and support the transformation of the consortium, the I-SITE ULNE will be relying on the implementation of research and training organization focused on three Hubs, or concentrators, that will gather the group's forces of excellence: Hub 1: "Precision Human Health", Hub 2: "Science for a changing Planet" and Hub 3: "Human-Friendly Digital World". One of the ambitions of the project is to bring ULNE to the **top of international rankings in these Hubs' topics**.

The Hubs combine science and scientific solutions with societal approaches to build tomorrow's inclusive society promoting citizen well-being. The I-SITE research activities transfer fundamental discoveries to applied technologies to give tangible innovation in the society. The Hubs require and practice a real interdisciplinary approach and bridge the gap between the different fields and declensions of science. These Hubs will be created early, during the Initiative's launching stage and focus on the areas of thematic excellence defined above. The associated Graduate Schools will be launched by 2018, implementing good operating practices between academic research and training in particular. A comparison can be made with same category universities in Groningen (ARWU 72), Wageningen (ARWU 101-150) and Texas A&M University (ARWU 101-150). They organize their research and training policies around precisely defined thematic areas on which they focus most of their efforts and means. Their mode of organization is characterized by strongly overlapping research and training in theme-based "Graduate Schools".

The Hub of Excellence "Precision Human Health"

The ambition of this Hub of excellence is to establish ULNE among the world leaders in precision medicine, and at the forefront of translational biomedical research in Europe. The I-SITE will aim at galvanizing the work across multiple disciplines to establish a network of internationally recognized researchers specializing in clinical sciences, molecular biology, genetics, chemistry, bioinformatics, mathematics and computer science, as well as environmental and social sciences. By favoring cutting-edge collaborative projects the ULNE I-SITE will **sustain and expand** its existing perimeter of excellence by making the most of the digital revolution and maximize the impact for patient and society, in order to establish lifelong precision health as the new standard of care.

The **University Medical Center Groningen** (1 500 Ph.D. / 30 000 students) has been identified as a meaningful benchmark regarding Hub 1 in Precision Human Health for its high scientific international visibility, the funding of "Umbrella Initiatives" answering ambitious societal challenges as well as the early selection of students from BSc/MSc for research.

	Scientific Strengths (Consortium)	Benchmark: Groningen University
Production (2012-2015) ¹⁶	5 161 publications	11 716 publications
Impact: articles in top 10 %	18.0%	19.3%
Excellence: articles in top 1%	3.6%	2.9%
International collaborations	37.6%	47.0%
Rankings 2016	ARWU: (/) Clinical medicine & Pharmacy QSWU: 301-400 Medicine 301-400 Biological Sciences	ARWU: 51-75 Clinical medicine & Pharmacy QSWU: 101-150 Medicine 51-100 Biological Sciences

The Hub of Excellence “Science for a Changing Planet”

This Hub will tackle the challenge of our changing planet, by elaborating a common, synergistic and integrated vision of mitigating or reversing those changes. The I-SITE initiative will establish an international leadership for ULNE in understanding and monitoring planet changes, understanding dynamics of climate change and air pollution and their societal aspects/impacts, the transition to a bio-based economy with the implementation of sustainable bio-sourced raw materials and their valorization through viable value chains in biorefineries. We intend to be the first fully integrated Centre in the world from TRL 1 to 9 for biomass-derived products, with remarkable and unique facilities such as REALCAT, upscaling capacities with UPCAT under construction, and implementation in VEREM, and direct industrial implementation development within Eura Industry Innov’.

The **University of Wageningen** (ARWU 101-150, 1 900 Ph.D. / 10 000 students) has been identified as a benchmark for its high visibility of research in the fields organized in 6 GSs, especially the Institute of environmental science and climate research. A cooperation agreement between Hauts-de-France Region and North Rhine-Westphalia will be extended in 2017 to the Dutch province of Gelderland (where Wageningen is located).

	Scientific Strengths (Consortium)	Benchmark : Wageningen University & Research Centre
Production (2012-2015) ¹⁷	3 155 publications	3 238 publications
Impact: articles in top 10 %	11.3%	21.8%
Excellence: articles in top 1%	0.9%	4.0%
International collaborations	57.7%	61.7%

¹⁶ InCites Dataset updated 2016-09-23. Includes Web of Science content indexed through 2016-07-29. For benchmark analysis OECD Medical & Health Sciences was used.

¹⁷ InCites Dataset updated 2016-09-23. Includes Web of Science content indexed through 2016-07-29. For benchmark analysis OECD Physical Sciences and Astronomy, Chemical Sciences, Earth and related Environmental Sciences, Environmental Engineering.

Rankings 2016	ARWU: (/) Environmental Science 151-200 Chemical Engineering 151-200 Material Science & Engineering	ARWU: 2 Environmental Science 76-100 Chemical Engineering 101-150 Material Science & Engineering
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The Hub of Excellence “Human-Friendly Digital World”

The Digital World is set to occupy an ever-increasing space in the coming decades. It will affect in depth the individual and social life, the business world and human health. New uses, new possibilities, new ways of living, working and caring will emerge in response to growing expectations of individuals and of society as a whole. In the recent years, some of these technologies (hard and soft) have generated serious societal issues related to biocompatibility, mismatch with cognition and ergonomics, lacks in security and privacy, risk of piracy and appropriation, leading to problems of acceptability and rejection. This Hub proposes to lead research on disruptive technologies in the digital world taking into account the recommendations issued from studies carried out within the humanities and the social sciences and more particularly in psychology and cognition. The three challenges below are strongly interconnected and aim at conceiving and constructing new digital technologies characterized by strong security and privacy, which can be both easily accepted and easy to use by individual citizens as well as in industrial or hospital environments. They offer a vertical roadmap from the modelling of new concepts to their full implementation, respectful of social and cognitive constraints. To that purpose, this Hub will harness the talents of the high quality ULNE research teams in a wide range of disciplines (including mathematics, physics, ICT, data sciences, sociology, cognitive sciences, and nanotechnology).

The **Texas A&M University** (ARWU 101-150, 5 030 Ph.D. / 51 000 students) has been identified as a relevant benchmark due to its high international visibility in particular in mathematics, and electrical and electronic engineering as well as to its excellence in innovation and technology transfer.

	Scientific Forces (Consortium)	Benchmark: Texas A&M University
Production (2012-2015) ¹⁸	2 554 publications	5 474 publications
Impact: articles in top 10 %	9.6%,	17.7%
Excellence: articles in top 1%	0.7%	2.9%
International collaborations	54.6%	56.7%
Rankings 2016	ARWU: (/) Mathematics QSWU: 251-300 Mathematics 251-300 Engineering - Electrical & electronic	ARWU: 14 Mathematics QSWU: 51-100 Mathematics 51-100 Engineering - Electrical & electronic

¹⁸ InCites Dataset updated 2016-09-23. Includes Web of Science content indexed through 2016-07-29. For benchmark analysis OECD Mathematics, Computer & information sciences, Physical sciences and astronomy, Nano-technology

Education and training through research: the Graduate Schools

The ambition is to build and articulate attractive thematic Graduate Schools (GS): “Precision Human Health”, “Science for a Changing Planet” and “Human-Friendly Digital World” with the scientific activities conducted in the eponym Hubs of Excellence. These GS will be developed by collaboration between the scientific programs and the education activities. They will constitute advanced “labs” for the organization of research-education within the Initiative to be further replicated as models for the University Lille Nord-Europe. In particular, interdisciplinary graduate schools are subsequently planned on the subjects of Bioeconomy, Cognitive Science, Security or Translational Medicine. Their attractiveness will first rely on high level fully English masters with a significant number of lectures given by world-class invited lecturers and the opportunity to carry out research projects within the Peridex research teams. A **fast-track to Ph.D. program** will be implemented in these GS (Figure 4): it will be based on early detection and selection of students (bachelor and master) keen and able to pursue studies in research. These students will attend dedicated courses in English during **interdisciplinary seminars** in summer-winter schools, where basic and fundamental knowledge from the Hub subjects will be delivered. A selective exam will prefigure the recruitment of students for the I-SITE GS. In the GS, students will benefit from:

- An **interdisciplinary research-driven training** thanks to the active participation of research personnel involved in the Hubs;
- **High level international lecturers** thanks to I-SITE junior and senior chairs;
- A **mandatory international mobility** of 6 months during the Ph.D. in international networks of the consortium or a 3 to 6 months’ **internship in a company**;
- **Digital tools and pedagogical innovations** implemented in the I-SITE project.

To ensure a realistic ramp-up of the GS in the Initiative, the above activities will rely on already existing interdisciplinary masters (including Labex ones). Fast-track to Ph.D. will also represent an attractive policy to recruit talented international students willing to graduate in a high-level University with high visibility on the themes supported by the scientific Hubs of Excellence.

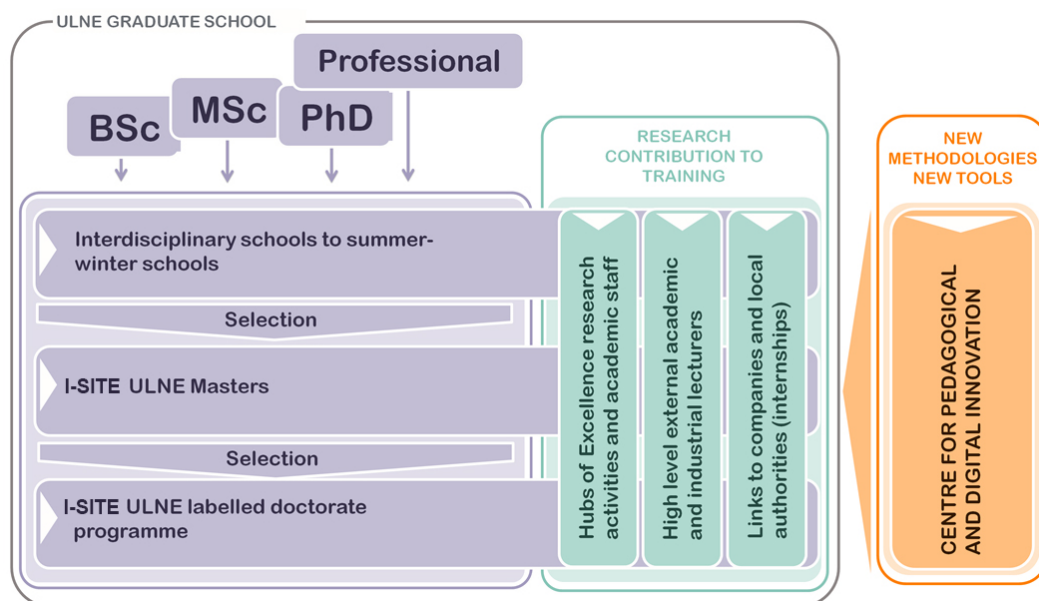


Figure 4: Implementation of the fast track to Ph.D. inside the Hub/GS

2.3 SUPPORT THE ADVENT OF PEDAGOGICAL AND DIGITAL INNOVATION

Outstanding training relies on both high level scientific curriculum and efficient pedagogical methods allowing the students to take complete advantage of the training. The creation of the three GS aims at implementing the first requirement. Running on from our long experience in disruptive pedagogical developments, our goal is to go further to become an international reference in that field. Such a goal can only be reached if we provide a strong and coordinated support to pedagogical teams often puzzled by the wide diversity of new methods (including e-learning, problem-based learning, flipped classroom) and the potential of the digital world (including MOOC, SPOC, Learning Management Systems).

Our strategy first relies on the structuring of all existing centres and resources of the consortium within a unique **Centre for Pedagogical and Digital Innovations (CPDI)**. The IDEFI ADICODE and its concept of co-design will form the basis to build on. The I-SITE will provide this Centre with all the necessary means to fulfil our ambition whether it is human resources or new materials. The CPDI will thus provide teachers with strong support to help them evolving. CPDI governance is centralized, but its operational structure is decentralized to allow the necessary proximity with teachers.

Beyond the deployment of new and active pedagogies, the CPDI will also be the cornerstone of our strategy to become an international reference in the fields of “Learning Analytics” and “Adaptive Learning”. Indeed, the efficiency of new pedagogies needs to be monitored in a closed loop strategy so that they can continue to improve over time. Learning analytics are thus not only necessary for improving the pedagogy itself but also to the students who need rapid feedback to adapt their own strategy of learning. Our ambition is further to go beyond to propose at the ULNE level the most efficient and attractive training. Construction of student knowledge is a complex global process relying on the interaction between the student, the methods and contents of the training itself and the overall learning environment. We aspire to develop “adaptive Learning” strategies and lead this field within ten years. Beyond the forces provided by the CPDI, the research developed within Hub 3 is clearly a key and strong point to fulfil our ambition. Within ten years, the pedagogy of ULNE will have been deeply modernized and will be seen as a world-class reference. This strategy is strongly supported by collaborations with partner Universities in the framework of the set-up of a European Campus and more particularly with KU Leuven from 2017 (*e.g.*, on learning analytics). The innovative pedagogical methods developed within this frame along with the new means provided by digital technologies will enable the development of a new and diversified type of lifelong learning strategy more able to attract companies as well as abroad students, a sector where France is lagging behind.

2.4 POSITIONING ULNE IN THE NORTH-EUROPEAN NETWORKS OF EXCELLENCE

ULNE international development is a strategic and priority line of action: the aim is to instill more top-down strategies in the positioning of ULNE taking the opportunity of the cross-border location of Lille as well as our already high number of international collaborations. The international policy deployed *via* I-SITE focuses on two main challenges: implementing an attractive policy for talents recruitment and significantly increasing the number of Ph.D. students.

First, the strategy consists in structuring existing international collaborations with prestigious Universities to consolidate a position in excellence networks at the European and Worldwide levels in the scientific Hubs. The goal is to streamline collaborations in both research and education in a seamless manner, deploying partnerships with Universities from masters to doctorate levels in order to create the recruiting ground of doctorates trained in an international context.

Second, the geographic position of Lille in Northern Europe leads to the cornerstone of our international policy: the creation of a **European Grouping of Territorial Cooperation EGTC “European Campus”** (joint professorships, joint administrative personnel, joint service departments, joint doctoral candidates and students, joint research projects, and dual degrees) initiated with Belgian partner Universities will shape the future attractiveness of ULNE in the Northern Regions of Europe. This action is based on the example of the European Campus “EUCOR” set-up between Strasbourg, Haute-Alsace, Basel, Freiburg and the Karlsruhe Institute of Technology. To achieve such an ambition, KU Leuven (ARWU 2016: ranked 93) is a key partner, which has expressed its strong commitment in joining our initiative to co-build this European campus. In particular, the excellence of KU Leuven in pedagogical innovation and their desire to collaborate with I-SITE ULNE is strongly backing up our global ambition. Moreover, our framework agreement signed in 2015 with Ghent University (ARWU 2016: ranked 62) and Université Catholique de Louvain (ARWU 2016: ranked 151-200) will contribute to that momentum.

Finally, BREXIT is resulting in opportunities to cement bilateral collaborations with UK Universities taken to continue collaborations with European collaborators, and access to European funding and networks: in this context, University of Kent appears as an obvious candidate for ULNE interactions since both Universities share common strategies in research, education and links to the socio-economic players.

2.5 A RENEWED RELATIONSHIP WITH THE SOCIO-ECONOMIC SECTOR

Close relationships and collaborations with the socio-economic sector and mainly the companies are of prime importance. The Initiative sustains and expands this vital link. The implementation of a **Front office** facilitates connections with companies and enables efficiently proposing them a full range of services. The distant and blended learning methods and tools developed within the CIPN constitute a first leverage to fulfill our objective. The Initiative also sustains the development of public-private projects and provides help to researchers who want to file patents. Along with SATT, the Initiative also eases the way to researchers who wants to create start-ups and spins-off. Training is also a way for expanding our links with companies: the new Creative Labs will allow student, teachers, researchers and company staff implementing Design Thinking methods to answer practical questions proposed by companies themselves. The overall strategy consists in creating a new relationship in which the university also brings added-value to companies concerns, in a win-win strategy.

Implementation of the Initiative

3.1 STRATEGIC LINES OF ACTION [SUSTAIN & EXPAND]

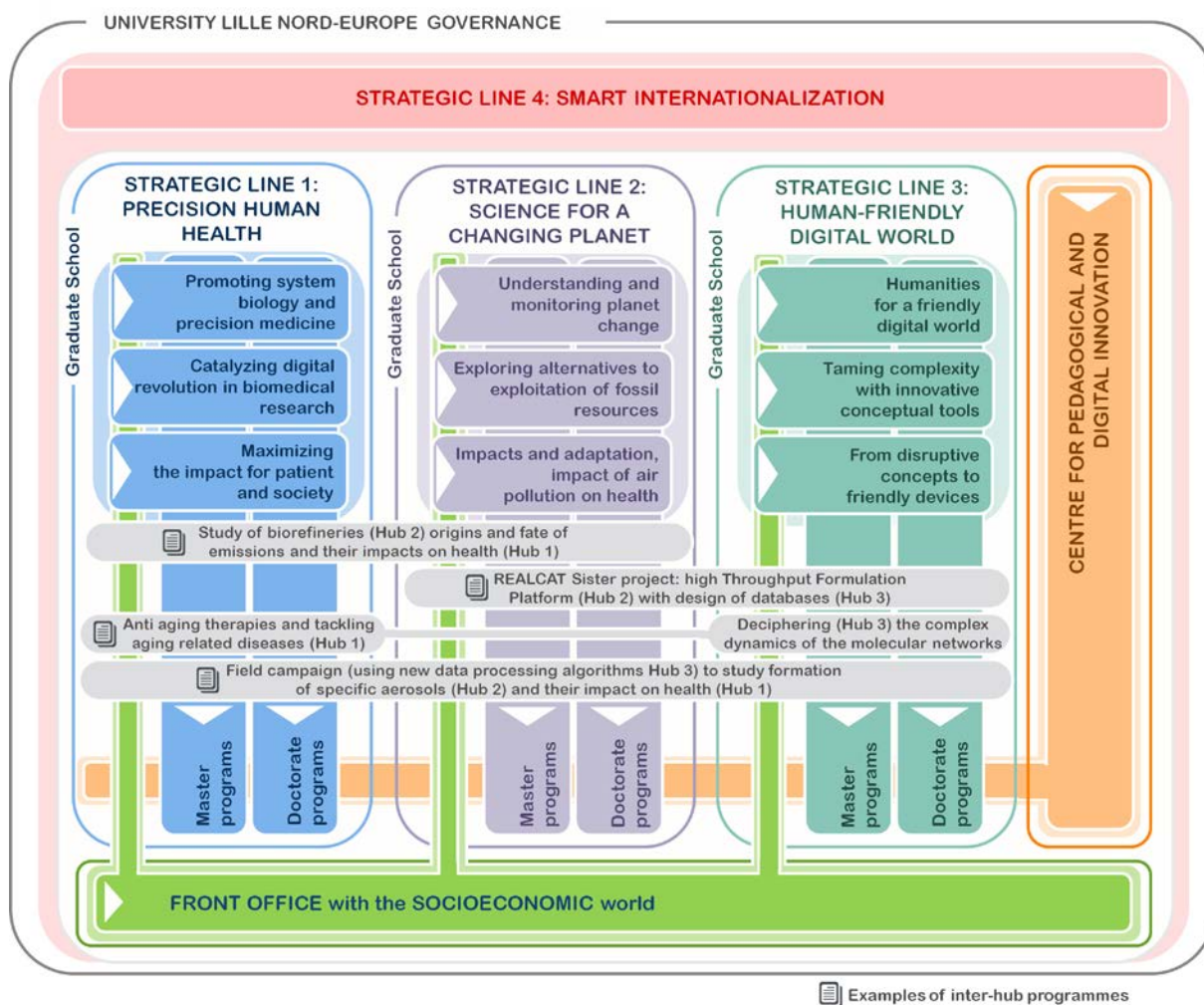


Figure 5: Strategic lines of I-SITE ULNE including the first inter-hub programmes to be implemented

The scientific and higher education program is implemented at the heart of the consortium and is articulated around the three interconnected Hubs of Excellence “Precision Human Health”, “Science for a Changing Planet” and “Human-Friendly Digital World”. The Hubs, designed as scientific and creative hot-beds, integrate all the dimensions of I-SITE, by **interweaving research, innovation, education, internationalization along common targets**. The Hubs will structure the scientific and higher education activities in their respective perimeters with the ambition to operate as I-SITE ULNE Graduate Schools to reach high visibility and attractiveness at the international level.

The “**sustain**” concept applies to support fundamental themes and disciplines at the heart of the I-SITE (peridex) in order to maintain a high level of scientific visibility in an increasingly competitive international context. We therefore ensure the robustness of our foundations of excellence by prioritizing a part of the resources and means on the heart of the Hubs, further promoting cohesion within the hubs.

The “**expand**” concept weaves new networks across and beyond the hubs by innovative combinations and cross-fertilizations to explore new research fields. The “expand” concept is intimately linked to the extension of the Peridex by integrating initially external teams by accretion with the required level of interdisciplinarity, notably to address complex and systemic societal challenges.

Strategic line 1: The Hub of Excellence “Precision Human Health”

Challenge 1: Promoting system biology and precision medicine. Precision medicine relies on the strategic use of genomics and molecular diagnostic tools to precisely define disease subtypes and understand root causes of disease. Further insights into lifelong intricate mechanisms of diseases, from conception to aging, will promote both targeted therapy and improved monitoring, not only of treatment response, but also of individual health status as an aid to prevention and proactive management. I-SITE ULNE’s aims to catalyse the research network in precision medicine by promoting collaborations between clinician-scientists and researchers across the Hauts-de France Region as well as by enabling the collaboration with leading international academic medical centres and the biotech industry. Among I-SITE ULNE’s plans for precision medicine is a comprehensive biological repository that will store and allow analysis of 100 000 patient specimens to enable translational researchers to develop new therapies that, in turn, will transform the way clinicians diagnose and treat patients.

Challenge 2: Catalyzing digital revolution in biomedical research. In the coming decade biomedical research will deliver and utilize a considerable amount of information derived from deeply investigated patients and their environment. Smart, connected products will offer exponentially expanding opportunities for new functionality, far greater reliability, much higher product utilization, and capabilities. The multi-level analysis of data from vast cohorts will represent unprecedented opportunities and challenges. However, this will require integrated health information systems but also novel technologies of electronics, material sciences, optics, computational mathematics, and systems engineering, as well as intense collaboration between teams of scientists, physicians and engineers. I-SITE ULNE will act as a catalyst for disruptive innovation in digital health research by connecting existing resources in health and technology throughout the consortium. Another challenge of the Initiative will be to visualize complex validated data sets in engaging formats and forms that will be clinically actionable in an ever-changing background of human health.

Challenge 3: Maximizing the impact for patient and society. Despite tremendous efforts in biomedical research in recent decades, overall health has fallen behind on many metrics, such as the prevalence of non-communicable chronic diseases or life expectancy. To address these issues, the efforts of I-SITE ULNE must not be limited to biology, but also involve behavioral, social, economic, and structural drivers of population health. The Initiative will foster an environment of innovation and interdisciplinary collaboration that encourages the translation of ideas into patient benefits, and reorients healthcare systems towards outcomes rather than on delivering interventions. Frameworks addressing ethical, legal, financial and social aspects will move the system a step further, by harmonizing and coordinating the management, organization and delivery of the clinical and translational research enterprise and care chain.

Strategic line 2: The Hub of Excellence “Science for a Changing Planet”

The goal is to integrate present capabilities developed through existing programs into a unified framework relevant to global change including oceans, air, earth, and, obviously, living organisms. The project requires an interdisciplinary approach made possible by the complementary expertise of the different teams involved and of the teams that will further join the initiative to address new challenges. Exchanges will be mutually beneficial and are expected to bring new ideas from one research area to another. To achieve a common, synergistic integrated vision, we address three challenges within this Hub:

Challenge 1: Understanding and monitoring planet changes. Better characterizing the fundamental and multifactorial phenomena involved in the changing process of the planet is necessary to provide relevant monitoring and remediation protocols. Our goal here is to consolidate our multidisciplinary "competence" to better characterize the types of changes that are ongoing, their signature, their cause and their impact.

Challenge 2: Exploring alternatives to exploitation of fossil resources for global sustainability and innovation to minimize planet changes. The transition to a bio-based economy with the implementation of sustainable bio-sourced raw materials requires completely new approaches in R&D. On the one hand, biotechs and chemical sciences will play a leading role in the construction of the future industries of the 21st century. On the other hand, new synergies between agronomical, marine resources, biological, physical, chemical, and technical sciences must be elaborated and established. This will be combined with new transportation and storage systems, logistics, media and information technology, and with new inputs from the economic, political, health, environmental and social sciences. The consortium will strengthen these competencies in close collaboration with Wageningen University, which is a leader especially in the upstream part of the value chain. Together with our competencies, we have the potential to become Number One in bioeconomy. In parallel, we will take advantage of the presence of the largest nuclear plant in Eastern Europe to enhance the existing technologies, based on our recognized know-how. Close interaction with the environmental activities assessment (Labex Cappa) will enable fine determination of the impact of our bioeconomy and nuclear approaches, further enabling back-optimization in a virtuous and socially acceptable system.

Challenge 3: Impacts and adaptation, impact of air pollution on health. Climate change induces changes in the dynamics of air contaminants, which increase the incidence of a number of inflammatory diseases of the respiratory and digestive tract and different types of cancer; these effects will be studied in connection with challenges 1 and 2. Influence of global change on people's lives and society, perception of climate change by different layers of the society will notably be studied.

Strategic line 3: The Hub of Excellence “Human-Friendly Digital World”

Challenge 1: Humanities for a friendly digital world. This challenge is led by the social sciences that will identify key criteria for a human-friendly digital world. It focuses on two complementary issues: the impact of the cognitive systems on the human-machine interaction in the digital world, and the impact of the digital world on cognitive systems. One main orientation is to develop conceptual and technological tools to study human cognition including the techno-anthropologic relationship. Using the local economic clusters (Plaine Image and Euratechnologies) and innovation platforms (CEA-Tech, INIRIA-Tech, Equipex), we will focus on dedicated digital display and virtual-augmented environments to evaluate affective and cognitive processes. The aim is to improve the access to knowledge in education and culture, as well as to foster individual well-being and sustained health. Also, most digital technologies are endowed with cognitive properties and must be viewed as elements of the human cognitive system: we will study how cognitive systems adapt to the expanding amount of real-virtual-augmented information available in manifold innovative digital formats, interfaces and tools. Another key matter concerns security and privacy. Services today are built on centralized personal data that are collected often without the agreement of the user. Many ethical questions (with legal and political issues especially for medicine) arise and the target is to develop new paradigms in which users have control over personal data. The development of privacy preserving decentralized systems on large networks of users and devices based on data mining and machine learning techniques is a major issue that will be addressed on the basis of acquired expertise (ERC POC SOM).

Challenge 2: Taming complexity with innovative conceptual tools. Systems in which many different components interact strongly and on a global scale typically give rise to complex collective behavior. Such complexity is inherent in the dynamics of high-dimensional physical and biological systems, but also in man-made information networks, in big data and in the internet of everything. By forging new concepts and tools, Mathematics, Physics and Digital Science provide us with the crucial models that enable understanding and controlling the above complexity for the benefit of both citizen and society. This Hub, extending the excellence of the Labex Cempi, will address several outstanding conceptual challenges, from number theory to scientific computation and statistics, and use its wide continuum of expertise to translate conceptual breakthroughs into innovative technology. For instance, it will decipher complexity in dynamical phenomena in order to construct unified theories in nonlinear optics and in hydrodynamics, in superfluidity and in Petabits links using wireless or optical communications. It will develop models to understand the communication complexity in living organisms forging new ways of bio-inspired communications. The main strategic line will be the birth of disruptive ideas and concepts in order to master the complexity of the systems considered.

Challenge 3: From disruptive concepts to friendly devices (hard and soft). This Hub can be considered as the factory of new devices and systems merging the recommendations of the Challenge 1 and the disruptive models/concept of the second challenge. This can be achieved with technological breakthroughs in hardware and software fields and combining the following technologies: additive process, micro/nano structuring, nanofluidics, optics, numerical devices and cognitive technologies. Nevertheless, irrespective of the solution to be implemented, it shall be sustainable and focus on the use of earth-abundant materials to be in line with the renewable concept they are aimed to support (link with Hub 2). Moreover, one of the target of this challenge is to develop a strategy towards harvesting, intelligent net-zero or positive energy of the devices and systems especially when there are wearing by the citizen (nomadic or on-board systems) (link with Hub 2). This is required because of the exponential energy consumption of the Digital World. Invisible and wearable (downsizing and biocompatibility) devices and systems will be defined in close collaboration with the humanities before

conception. Data sciences, including crowd-sensed data, data-mining and machine learning will bring huge benefits for the Hub 1: personalizing medicine by using and analyzing patient digital source, constant health monitoring by developing a framework for a crowd of smart devices for measuring patient and environment data. The main strategic line of this challenge is to realize new devices and systems more widespread, convincing and accepted in everyday life including industrial and hospital environments.

Examples of Inter-Hubs of Excellence Synergies:

- Analysis of the impacts of bio-refineries (Hub 2) encompassing the origins and the fate of their direct and indirect emissions (from the field, through the industrial unit, to the final disposal, including combustion usage issues in the case of biofuels) by crossing expertise in the fields of physics and chemistry of the atmosphere, combustion, biodiversity, human sciences and health (Hub 1);
- Set up of field campaigns using prototype instruments and satellite observations (including new data processing algorithms with Hub 3) to document atmospheric processes. Understand the kinetic behavior of representative radionuclides via numerical (Hub 3) or experimental complementary approaches to evaluate the formation of such specific aerosols (Hub 2), and their impact on air quality and health (Hub 1);
- Designing a sister project to REALCAT (Hub 2), as a High Throughput Multi-Parameters/assessment Formulation Platform consisting on a holistic and predictive compounds formulations based on a concerted approach of physico-chemistry, (eco)-toxicology, tests on skins (Hub 2) with design of databases, backed up by mathematical algorithms developments (Hub 3), and containing all the descriptors to guide safer compounds discovery. This platform will be unique in the world with strong connections to REALCAT and UPCAT.
- Diseases such as cancer require deciphering the complex dynamics of the molecular interaction networks underlying cellular functions. To this aim, this theme between Hubs 1 and 3, based on existing collaborations between the LABEX EGID and CEMPI, will develop breakthrough approaches combining quantitative biophysical methods, biophotonics, nanotechnology and mathematical modeling.

Strategic line 4: Smart internationalization of the I-SITE ULNE

The international policy of the Initiative of Excellence aims at setting up and reinforcing strategic international alliances in order to promote the visibility and attractiveness of the consortium worldwide, and to ensure the international deployment of its activities.

Challenge 1: Create a European Campus and develop smart international alliances.

The consortium will take advantage of the strategic cooperation agreement signed with the University of Ghent and the Université Catholique de Louvain in 2016, as well as of its partnership with KU Leuven. The creation of a European Campus with these universities will be the cornerstone of this smart deployment strategy in Northern Europe from 2017. To expand the European campus, the consortium will benefit from its existing alliances with British Universities of the UK N8 network, in particular in the context of the Brexit. Thus, the University of Kent is a relevant candidate with which we share many similarities, whether on themes of excellence in research and training or on the local economic and social context. The consortium will integrate the U4 network (strategic partnership between Ghent University, University of Göttingen, University of Groningen, and Uppsala University) upon proposal from Ghent University. Our overall strategy for smart internationalization will be articulated with the strategy of local authorities and in particular with the Hauts-de-France Region, which has a cooperation agreement with North Rhine-Westphalia, where we are already working closely with four top 200 universities (Bonn, Cologne, Ruhr-Bochum, Lund and Münster). This agreement will be extended with the Dutch province of Gelderland (Gelderland), where two strategically important partners of the consortium are located: the Wageningen University and Radboud University Nijmegen. Finally, we will open a representative and lobbying office of ULNE in Brussels. In the rest of the world, our strategy is to contract strategic partnerships with prestigious universities. We have, e.g., recently developed new partnerships in Asia and Latin America in line with hubs thematics. It is for us an opportunity to soon open two offices in Brazil (Belo-Horizonte) and Singapore.

Challenge 2: Export and import the best skills and competences in research, training and innovation. ULNE I-SITE has the potential to develop meaningful international partnerships since the consortium is currently ranked second (Strasbourg being ranked first in France) in the number of courses taught in foreign languages (28 trainings in English). Furthermore, we have developed a significant number of dual diplomas with Universities among the top 100 of international rankings (University of Münster, Uppsala and Georgiatech) and international exchanges are increasing especially in the "Grandes Écoles" and Lille University. I-SITE ULNE will be used as a catalyst, concentrating resources and means at the service of researchers and teachers to fully exploit the potential of international collaborations.

Challenge 3: Reinforcing collaborations in the context of an increasingly competitive international University landscape. Our current partnerships with European Universities too often lack in continuity between research and education. The challenge is to build such required continuity with the promotion of students' exchanges, exchanged master diplomas, co-supervision of Ph.D., joint research facilities/labs or units. In the first 4 years ("sustain"), these actions will be prioritized in the perimeter of the Hubs with top 200 Universities and will be further deployed at ULNE level, the overall strategy being based on our solid experience in the set-up of international joint laboratories.

3.2 ACTIONS (SUSTAIN & EXPAND)

Action G: Set up the organization & implement the Operational agency

- I-SITE ULNE targets the creation of a world-class University: University Lille Nord-Europe. To achieve this aim, our first action will be to set up a governance structure reinforcing cohesion and commitment of its constitutive entities as well as for managing all I-SITE actions;
- This action will support the smart internationalization process at the global level of the Initiative of Excellence ULNE, and coordinate the specific bottom-up international actions in research, education and innovation. At the launching of the initiative, the actions will be supported by I-SITE ULNE foundation and governing bodies (as described in section 4): Implementation of the actions for smart internationalization, Communication activities concerning international research and training activities, Organization of the international and joint calls for proposals, Support to find and apply for funds to run international projects, Negotiation with partner universities to set up common funding, Proactive international talent search (students and researchers) in cooperation with the team in charge of the recruitment process, Set-up of offices in Brussels, Singapore and Brazil;
- ULNE will be used as the key brand for all the activities of the Initiative. This strong common and unified brand will enforce ULNE international visibility. Internally, it will also reinforce the identity feeling of staff and students. All the research and academic departments including “Grandes Écoles” will combine their names with ULNE on their website, in the frame of publications and conferences, as well as when hiring students and staff. This branding will be combined with the definition and set-up of a common communication policy within ULNE.

I-SITE ULNE will allocate 500 K euros yearly for the funding of staff and for the day-to-day activities. I-SITE ULNE will allocate 200 K euros yearly to support communication and branding activities. Operational support will be provided by the consortium.

Action R1: Sustain excellence in research and innovation

I-SITE funds will be allocated in order to drive the research activities of the three Hubs, to reinforce the international scientific reputation of the consortium, to attract high-level senior researchers, to support emerging teams and promising young researchers, as well as to increase the innovation potential by fostering interdisciplinary, cross-sectional and international developments:

- The **Hubs Core Fund** will provide funding for research activities in each Hub. The selected projects will include the funding of Ph.D. students over three years. The funding will be dedicated to research teams inside each Hub to reinforce specific fields;
- The **Interdisciplinary Fund** will provide funding for research projects involving researchers from at least two Hubs with the purpose to yield breakthroughs. In addition to reinforcing the existing fields of expertise, the selected projects will promote bridges between Hubs to boost interdisciplinary research requiring competences and knowledge from at least two Hubs. The selected projects will include one Ph.D. student co-supervised by two researchers belonging to two different Hubs.

The eligibility criteria of this action will include specific features with the twofold objective of **increasing the Ph.D. supervision capacity** of the consortium and boosting the researcher creativity and **personal development**. Senior researchers will have an Accreditation to Supervise Research (abbreviated HDR in French, which is the highest academic qualification (required for supervision of doctoral students), or will commit to get their HDR during the course of such projects. The candidates will also commit to devote a significant amount of time during the project to submit ERC and/or H2020 projects. Young researchers will commit to teach a 20-hours summer or winter course covering their domain of expertise

in relation to their project. For all the selected projects, a reduced teaching load policy will be applied for the coordinators (young or senior), allowing them to dedicate more time to their Ph.D. students and research activities.

I-SITE ULNE will allocate 3 million euros yearly for the Hubs Core Fund and for the Interdisciplinary Fund (1.5 million per fund). The selected 3-year projects will be granted 150 K euros, including the recruitment of Ph.D. students.

Action R2: Expand excellence in research and innovation

Two types of fund will be proposed in this action:

- The **Open Fund** will support projects proposed by external teams that will contribute to / and expand one or more Hubs. At least 20% of the funding will be dedicated to Human and Social Sciences research. Each funding will finance research activities and one Ph.D. student;
- The **Umbrella Initiatives** will finance flagship programs gathering multiple research teams of the consortium and of the external partners that address transversal and complex issues. These Umbrella Initiatives will be inspired by the transversal programs funded by Groningen University. Each initiative will include the funding of two Ph.D. students and of one post-doctoral researcher.

I-SITE ULNE will allocate 750 K euros yearly for the Open Fund: the selected 3-year projects will receive 150 K euros. The Umbrella Fund of 500 K euros will finance one flagship project per year including the funding of 2 Ph.D. students and 1 post-doctoral researcher. This action will allow the recruitment of 7 Ph.D. students per year.

Action R3: Reinforce research international visibility, attractiveness and competitiveness

In order to reinforce its visibility and reputation, the consortium and the external partners must increase their participation in competitive projects at the national and the European levels, as well as increase the numbers of publications in high impact factors journals. The **ULNE Support Office** will thus especially promote applications to the most competitive national, European and international grants:

- The ULNE Website will provide a comprehensive information platform on external funding opportunities, and assistance in the set-up of grant applications and innovation projects;
- A specific support to **promote and increase** the number of ERC applications will be set up consisting of two main levers: (i) researchers will be supported by the I-SITE ULNE support office in preparing their ERC applications, (ii) ERC applications that ranked A but not funded due to high competitiveness will benefit from a financial support co-funded between I-SITE and Hauts-de-France Region: this funding will support the realization of scientific work necessary to increase the chances of success of the proposal. The candidates will be then supported in their re-application procedures;
- To reinforce research international visibility and competitiveness, the I-SITE ULNE will fund an attractive and flexible **postdoctoral programme, assistant professor with tenure track positions and Chairs of Excellence** (detailed below in the HR section);
- ULNE Support Office will also encourage the submission of publications in high-level journals by providing editing assistance and **granting awards** to authors of publications contributing to increase the ULNE international ranking.

I-SITE ULNE will allocate 3 025 K euros yearly to support this action. The ULNE Support Office will receive 425 K euros yearly for the funding of 3 experienced project managers (70 K euros/year), for day-to-day activities (including Grant application support), 100 K euros/year for gratification (5 K euros per awards). 600 K euros will co-finance 6 ERC packages (200 K euros/project with contribution of the

Hauts-de-France Region). This action will finance 20 postdoctoral researchers yearly (1 million/year), 1.5 assistant professor with tenure track positions yearly (400 K euros/year) and 1 Chair of Excellence every two years (500 K euros/year).

Action R4: Setting-up a doctoral incubator to create a breeding ground for doctoral education

In order to develop the ULNE world-class University, it is of primary importance to attract talents and bring them to the Ph.D. level Accordingly, I-SITE ULNE will develop a doctoral incubator with two initiatives:

- **Initiation to scientific research for undergraduate students** will be co-organized by the thematic Graduate Schools, and the undergraduate academic representatives. This action will promote the doctorate programmes to students in all the undergraduate programmes of the consortium and of the external partners. Courses in Research Initiation as well as short internships and collective projects will prepare and raise awareness among students to research and doctoral processes and projects. This Initiation to scientific research will be certified by the **ULNE certification**. These students will be eligible for privileged hosting conditions and **fellowship** to facilitate access to the thematic Graduate Schools.
- The **Master scholarship programme** aims at attracting the best national and international students (including students from abroad University). Students will follow the Master programmes in the Graduate Schools before their Ph.D. Moreover, students recruited in the Master programmes of the Graduate Schools will receive support (**scholarships, housing**). The new law on Masters will allow a sharp selection processes, and the excellence criteria for the recruitment will guarantee access to students from any social background.

I-SITE ULNE will allocate 500 K euros yearly to finance 100 Master scholarship programmes (5 K euros/year). No specific resources from I-SITE ULNE are required for the Initiation to scientific research programme: operational support will be provided by the consortium.

Action F1: Setting up of the Thematic Graduate Schools (GS)

The Graduate Schools will consist of three Interdisciplinary Schools corresponding to the three Hubs of Excellence. These Graduate Schools will serve as **demonstrators**, for further replication, of a new training model with the following characteristics:

- **Selection of students** based on academic criteria and professional goals of M1, M2 and Ph.D. students and associated special grants;
- A **Fast Track to Ph.D.** program offering continuity from Masters to Ph.D. with assessment and selection of candidates;
- For each Master student: A **Major** within the scope of a GS and a **minor** within the scope of the two other GS;
- Within the two years of Master, each student will have to realize a **masterpiece** (inspired from the model of the French "Companion" and the "Personal Challenge" introduced in the new degree course of Centrale Lille in 2017) to prove his/her ability to mobilize his/her competences towards excellence;
- **Entrepreneurship education** to promote creativity, autonomy and entrepreneurial mindsets of students and to encourage their awareness about self-employment and entrepreneurship;
- **Effective cooperation** between the Graduate Schools and business by integrating theoretical and practical knowledge through business-lead classes and internship programmes;
- **International mobility** through joint degrees;

- The **Ph.D. programme** of excellence for Ph.D. students will include a **mandatory international mobility** of 6 months during the Ph.D. in international networks of the consortium or a 3 to 6 months **internship in a French or foreign company**. This Ph.D. programme, that will open job perspectives, will significantly increase Ph.D. attractiveness to students.

I-SITE ULNE will allocate 1.8 million euros to set up the thematic Graduate Schools: 300 K euros for interdisciplinary courses (one week in summer and one week in winter, 10 invited lecturers for each), 500 K euros for the Leave for research/education/thematic conversion programme (as detailed in section 3.6.), 1 million euros for the co-financing with local authorities of 200 Ph.D. students per year.

Action F2: Promoting innovative pedagogy and novel learning strategies

- The creation of the **Center for Pedagogical and Digital Innovation (CPDI)** is the main goal of this action. This single and unified center will bring together the already existing skills and innovative training instruments developed by the consortium and the external partners (including IDEFI ADICODE, Learning centers, Fab lab). The CPDI will continue to develop new training places for renewed and intensified active learning such as video-conferencing rooms or rooms authorizing spontaneous interactivity with students. The rooms will be equipped, managed and organized by the CPDI, creating a virtually unique ensemble. The CPDI will also lead the implementation of learning analytics and adaptive learning in close collaboration with Hub 3 and KU Leuven. This center will be dedicated to all the students and researchers of the consortium and of the external partners;
- The implementation of **Creatives Labs** will enable the development of new interactions between academics and companies/public authorities leading to a strategy of value co-creation. Inspired by the Institute of Design of Stanford University, the creative labs will gather, in a co-design and design-thinking approach, students, teachers and staff from companies/public authorities to find solutions to concrete problems brought by the companies/public authorities themselves. Beyond the given solution, each Creative Lab is in itself a new and original active pedagogy tool developing student's skills and ability to perform in their upcoming career;
- The **Innovative Teaching Fund** will finance projects developed by teachers supporting the development of innovative practices, teaching and learning opportunities for students. This funding will encourage the development of interdisciplinary, intersectoral, virtually or other high impact teaching and learning experiences. The projects will be evaluated by an international jury, and will be supported by the CPDI for their implementation;
- The **Annual Awards for Excellence in Teaching and Pedagogy** will recognize teachers belonging to ULNE (lecturer, professor, graduate student, or teaching assistant) who creates and develops innovative approaches or methods to teaching concepts at the graduate and undergraduate level.

The CPDI will receive from I-SITE ULNE 2 310 K euros yearly for the funding of 5 managers (360 K euros), for the development of cooperation with KU Leuven in learning analytics and learning adaptive (600 K euros), for the Innovative Teaching Fund (900 K euros) and for the Annual Awards in Teaching and Pedagogy (50 K euros).

Action F3: Promote access to knowledge and lifelong learning

The availability of digital and teaching resources *via* the Web offers new opportunities for training and education to a wide audience outside University. This evolution in access to knowledge requires us to reconsider degree programs, and to give due space to **distance learning** and assessment using new types of teacher-student interactions. This action will provide to companies and public authorities access

to thematic knowledge and graduation programs or certification organized with partial presence at the University. Besides our usual mission of education, this process will encourage the return to University of those who have resigned before graduating. It will also promote executive education designed in collaboration with the economic and social world and tailored to the specific needs of employees from private sector and public authorities.

I-SITE ULNE will finance this action through the implementation of the CPDI, and operational support will be provided by the consortium.

Action V1: Provide funding for projects at the forefront of innovation

This action will provide innovation support to highly risky projects, and in particular to projects dealing with TRL3 to TRL5 (TRL: Technology Readiness Level) as well as the transition between these TRL levels, patent writing and submission and start-up creation. The **Project Maturation Fund** co-managed with the SATT Nord will finance three types of activities:

- The funding of projects targeting TRL3 to TRL5 developments in which the industrial application should still be identified. Projects will be selected for funding, and human and technical support will be provided for helping projects to reach maturation stages;
- Support for patent writing in order to help researchers to valorize the results of their research;
- Support to researchers with promising patents and willingness to create start-ups and spin-offs by providing co-funding to start-up creators, as well as operational support.

I-SITE ULNE will allocate 400 K euros yearly for the Project Maturation Fund. This action will be co-financed by the local authorities and/or the SATT Nord.

Action V2: Single Valorization Front Office to facilitate the interface and collaboration between academic and industrial entities as well as public authorities

SATT Nord will support the creation of innovative start-ups and new jobs, focusing on the transformation of innovations from TRL4 to TRL9. The objective of this action is to improve the innovation and transfer capacity of the consortium and of the external partners, in two main ways:

- Dedicating personnel, with strong knowledge of ULNE and private companies/public authorities, who can give advices and play the role of facilitators and intermediaries;
- Regular events (such as workshops, seminars, and networking days) will be organized in order to reinforce the interaction between academic, industrial partners and public authorities. This will support networking and promote common projects between social, economic and international partners and the consortium as well as the external partners.

The Front Office will receive 235 K euros yearly for the funding of 3 managing staff (65K euros/year) as well as 40 K euros for the day-to-day activities. The Front Office will benefit from operational support provided by the consortium and the external partners and will work in collaboration with the SATT Nord and the Scientific Parks.

Action V3: Developing alliances and partnerships with structuring economic sectors

The **Innovation Fund** will finance collaborative projects involving at least one company in line with the different key challenges identified in the three Hubs. The selected projects will necessarily include a Ph.D. student supervised by two researchers belonging to the Hubs over three years.

I-SITE ULNE will allocate 750 K euros yearly for the Innovation Fund. This funding will be complemented up to 50% through private funding and/or funding from local authorities. The selected projects will receive 150 K euros.

Action I1: Support international mobility

- The **Mobility fund** will support outward mobility to other world class universities, long stays abroad within the framework of international collaborations as well as sabbatical leaves in line with the Hubs themes. These exchanges will be made in the context of a reciprocal program that will allow researchers to strengthen their strategic partnerships by hosting incoming researchers of the highest international standards. I-SITE will also facilitate stays abroad for young researchers to help them joining well-developed networks with international teams of high standards;
- The **Mobility Graduate Fund** will provide to GS graduate students financial assistance for studying or conducting research projects abroad as part of third degree programmes.

I-SITE ULNE will allocate 300 K euros to finance the Mobility Fund and the Mobility Graduate Fund (2 K euros/grants; 100 grants per year).

Action I2: Deploying smart internationalization alliances

The cornerstone of this action is the creation within 4 years of a **European Campus** by transforming our strategic convention with the Universities of Leuven (already an external partner of our I-SITE), Ghent and Louvain into a European Grouping of Territorial Cooperation (EGTC). Built from our near and existing relationships with other universities in Belgium, Netherland (Groningen) and UK (Kent), we aim at growing this Campus towards Northern Europe within 10 years. This international campus will reinforce and support the strategic internationalization of the consortium and increase the potential number of researchers, teachers and students. Like the N8 Research Partnership in Northern England, this network of research intensive Universities in Northern Europe will maximize the impact of research by promoting collaborations and establishing innovative research programmes of international prominence, and attracting European funding (Interreg; H2020).

- The **International Office** will structure and develop the existing and emerging alliances by joining research networks in the themes of the Hubs of excellence (like the Healthy Aging network for Hub 1, or the U4 network for Hub 2), and by promoting selected strategic bilateral alliances with prestigious universities ranking in the World top 50, including Japanese universities such as the universities of Kyoto and Tokyo;
- The **International Fund** will support international networking and stimulate high profile collaborations. The I-SITE ULNE will co-fund actions 1) with partner universities (in priority located in the North-Western Europe to be in line with the I-SITE international strategy including Leuven, Ghent and Louvain with which the consortium already launched joint calls for proposals) and 2) with partner companies with ambitious collaborative projects between research teams from the three Hubs and high-ranking teams abroad. Each selected project will include a Ph.D. student co-supervised by researchers belonging to two different universities over three years.

I-SITE ULNE will allocate 750 K euros yearly for the International Fund. This funding will be complemented up to 50% through University partner funding and/or through private funding, and the selected projects will receive 300 K euros.

Action I3: Developing structuring alliances connecting research and education

The International Office will set up an international programme to jointly develop research and training cooperation with University partners. International masters programmes with partner Universities in the scope of the Graduate Schools will be developed in parallel with collaborations in research and innovation (including the setting-up of international labs and the co-supervision of Ph.D. students). This action will contribute to the development of an international pool of excellent Ph.D. students in the scope of the three thematic of excellence of the I-SITE ULNE.

No specific I-SITE funds are required for the Initiation to scientific research programme: resources (staff) will be provided by the consortium.

Action L: Reinforcing a specific and integrated environment to students

I-SITE ULNE sustains and expands the existing actions carried out by the “Grandes Écoles” and Lille University in the field of student life in order to attract the best French and foreign students through the following objectives:

- Developing students' **feeling of belonging to ULNE**: Identities (including Student Pass) will bear the ULNE brand;
- Promoting the community engagement in the Graduate Schools, by contributing to programmes such as the **civil engagement accreditation** that will reward the creativity and entrepreneurship of student projects aiming at providing sustainable solutions to social or environmental issues (including to student refugees) as well as by offering activities on campus and in residential areas in partnership with local communities;
- Supporting the **student associative life** in the Graduate Schools by encouraging the creation of associations that help students in their personal growth through artistic, athletic and civic extracurricular activities;
- Contributing to the creation and animation of the **ULNE Alumni association** to provide mentoring and opportunities for consortium students and researchers as well as to develop a **common identity** amongst students and alumni.

I-SITE ULNE will allocate 400 K euros yearly to support student life activities and initiatives and to reinforce the feeling of belonging to ULNE. Operational support will be provided by the consortium. The public authorities will contribute to finance this action.

Tab. H. - Attractiveness to students

Brief description of the attractiveness measure	Effectif Actuels (0 si nouvelle action, NA si inconnu)	Target headcount in 4 years	Origins of targeted students	Level concerned (L or M)
Unified identity: a single student pass to access all consortium facilities	100% (Pass Sup)	100% of students	All registered	L, M and D
Initiation to scientific research for undergraduate students (Doctoral Incubator)	0 (à T0 each student in License has a basic initiation to research)	10 % of students in the fields of the Hub have a reinforced initiation.	Local undergraduate students and students from the "Grandes Écoles"	L, M
Creation of 3 Graduate Schools (GS) with international visibility (selection process)	0 1 150 Ph.D. in the Peridex at T0	- 1 725 Ph.D. students in 2020 in the hubs (+50% Ph.D. students ¹⁹ in the hubs) - 200 students by graduate	All registered and international	M, D
Master scholarship program (attract students in GS with scholarships housing)	0 Scholarship program already exists for incoming mobility (FITEC, EIFFEL...)	400 students specifically financed on I-SITE funds Add to other already existing programs	National and international students, including partner Universities	M
Invited lecturers: interdisciplinary courses in Hubs/GS	0	100% of students of the GS	National and international students	M, D

¹⁹ Currently: 2500 Ph.D. in the Hauts-de-France Region, 2100 Ph.D. in the consortium (1150 Ph.D. in the peridex at T0) source: Strater + Doctoral Schools

Invited lecturers: summer-winter school	0	150 (50 for each Hub)	National and international students	L, M, D
Master courses in English	Currently 28 masters	100% of Graduate Schools new masters are in English	All + international	M

Tab. I. - Pedagogical innovations

Brief description of the pedagogical innovation	Effectif Actuels (0 si nouvelle action, NA si inconnu)	Target headcount in 4 years	Level L or M, or distribution between levels L and M
Center for Pedagogical and Digital Innovation			
Learning management system	100%	100%	L, M
e-learning	NA	100% of Student in GS + 50% over all courses of the consortium	L, M
Distance learning (especially for lifelong learning)	NA	+30%	L, M
New active pedagogies (including Problem based learning, Flipped classrooms, MOOC, SPOC)	5%	100% in GS + 30% over all courses of the consortium	L, M
Learning analytics	5%	100% of GS 30% over all courses of the consortium	L, M
Learning adaptive	0	25% in GS	M

3.3 ROADMAP

Overall description

The ultimate aim of our course of action is to create a new type of world-class University and more particularly, a University that will rank among the fifty leading universities in Europe: University Lille Nord-Europe. Our ambition stems from the excellence of our current site, both in terms of research and training, from the numerous existing collaborations and coordination, and from a shared certainty: our future depends on us being together within the context of a European Campus ambition.

The I-SITE Lille Nord-Europe project is an extraordinary asset at the service of this objective, not only in terms of the financial means it provides, but also in terms of structuration, where all stakeholders are actively involved towards a strong leverage effect. Our ten-year course of action does, therefore, rely on two very closely related actions: The construction of ULNE and the I-SITE-ULNE project, which will allow us to fast-track all the actions and collaborations, as previously discussed.

Initial state (T0) and actions up until T0+4 years

The first four years of the project will be devoted, on the one hand, to the institutional structuration of the site giving credibility to ULNE and, on the other hand, to setting up the key elements of the I-SITE project and its implementation. The I-SITE project will be supported by a **Foundation** to be created by partners of the Initiative²⁰ early in 2017. Partners who are external to the I-SITE project will be associate members of the Foundation. The skills and resources required to begin the I-SITE project will be provided by Lille University - Social Sciences and Humanities (Lille 3), who submitted the present proposal. The already largely initiated redevelopment and coordination processes among the consortium members will yield the following results:

- By January 2017, the EMD and Télécom Lille will have merged with IMT Lille-Douai, schools within the French IMT;
- By 2018, the three universities in Lille will have merged to form a single University, the faculties of which becoming those of ULNE;
- By 2019, Centrale Lille, ENSAIT and ENSCL will have also merged to form an entity pre-figuring the ULNE's "School of Engineering";
- By 2019, Science Po Lille and ESJ will have merged to form an entity that will prefigure the ULNE's "School of Public Affairs and Journalism". Even if adjustments are still necessary during the second stage of the project (see T0+4 to T0+10), the main constituents of the ULNE will have been set up by the independent institutions on the site.

By 2019, the campus's institutional situation will have changed from 3 universities and 9 "Grandes Écoles" to one University and 5 "Grandes Écoles", all with different statuses. The 2018-2021 period will be mainly devoted to stabilizing this first phase of institutional changes and preparing the next phase aimed at actually creating the ULNE: its governance and mode of operation are based on the one hand on agility and decentralization but also on the alignment of governance, the allocation of means and the policy aimed at attracting talents to meet the international ambition of excellence. This discussion will be

²⁰ Founding members of the I-SITE ULNE Foundation will be: Lille University (Lille-1-2-3), ECL, ENSAIT, ENSCL, Sciences Po Lille, ESJ, ENSAP, CHRU, IPL, IMT Lille Douai (EMD, Telecom Lille), ENSAM (Lille campus), CNRS, INSERM, and INRIA.

fueled by the effective implementation of the I-SITE project and the Foundation that supports it as well as by the report made by the French General Inspectorate of the Administration of National Education and Research (IGAENR) and J.C. Cytermann on governance model developments (November 2016).

As early as 2017, the founding members will provide the Foundation with the skills required within the I-SITE's sector of activity to smoothly enable full implementation of the project by allowing for the alignment of governance, the effective allocation of means and the concentration of talents:

- Allocate and manage I-SITE funds: the decision to allocate I-SITE funds will be taken by the Steering Committee (see section 4 for governing bodies organization);
- Policies (definition and implementation):
 - Research: the action will help making up for the site's main weaknesses in particular: the number of Ph.D. students, researchers with ERC grants and articles published in outstanding journals (including Nature and Science);
 - Training and educational innovation – By 2020, the Graduate School and Ph.D. incubator will be fully operational;
 - Master's degrees entirely in English, and selective international recruitment;
 - Courses that make full use of innovative teaching methods and digital technologies in particular - "Learning Analytics" will be made available to all students;
 - Promotion and relations with business: by 2017 a "Front Office" will promote open and long-term relationships;
 - Human resources;
 - Coordination and unification of partner recruitment campaigns: researchers and lecturers, as early as 2018;
 - Validation of recruitment profiles, recruitment conditions and process, as early as 2018;
 - Implementation of a strategy aimed at attracting and recruiting talents by making the most of the possibilities provided by the French "Liberties and Responsibilities of Universities" law, as early as 2018.
 - International relations: The I-SITE will create a European Grouping of Territorial Cooperation (EGTC) "European campus" with our Belgian partners (KU Leuven, Ghent, and Catholic University of Louvain) by 2020.

Domains	Situation from T0 to January 2018)
Institutions	<ul style="list-style-type: none"> • Creation of I-SITE ULNE Foundation (2017) gathering the member institutions to launch the initiative • Creation of IMT Lille-Douai (merging of École des Mines de Douai & Télécom Lille) in January 2017 • Creation of Lille University (January 2018) • Common degree delivered by ESJ and Science Po Lille • Centrale Lille, ENSCL & ENSAIT have engaged in a merging process (2018) <p>14 Institutions in 2016 will have transformed into 8 institutions in January 2019: 1 University, 1 School of Engineering, 1 School of Public Affairs and Journalism, 1 school of Architecture, IMT Lille Douai, ENSAM, CHRU, IPL</p>
Integration, pooling of resources	<ul style="list-style-type: none"> • Bilateral partnership agreements among I-SITE ULNE members: <ul style="list-style-type: none"> ○ Shared degree ○ Shared Ph.D. students and EC recruitment policy

- Coordination of research & training policy
- Sharing of equipment platforms in Biology Health, Sciences & technologies and Social Sciences and Humanities
- Effective unique affiliation for scientific publications

ULNE University model specifications during the 4 first years

Domains	Situation at T0+4 years
Institutions	<ul style="list-style-type: none"> ● Merging process finalized of Centrale Lille, ENSCL & ENSAIT ● Merging process finalized of Sciences Po Lille and ESJ irreversibly engaged
Integration, pooling of resources	<ul style="list-style-type: none"> ● I-SITE ULNE Foundation successfully set governance ● The Foundation organization is up and running, staffed, with quality management policies implemented ● Delegation of Authority (competences, resources and decisions in I-SITE perimeter) fully transferred to the Foundation ● Specifications of University Lille Nord-Europe are defined (competences, resources and decisions), principles and perimeter are identified ● Single affiliation for scientific publications, single doctorate program and masters in Graduate Schools under a single banner "University Lille Nord-Europe"

One of the main goals of the Initiative, during the four first years, will be to prepare the creation and implementation of ULNE. The success of this significant restructuring of the academic landscape demands intense interactions between all the stakeholders. However, the analysis of characteristics shared by most world class universities already suggests that the target model should place ULNE at the corporate level. The ULNE should be responsible for the global strategy and corporate functions, in particular for the functions transversal to its constituent bodies. At the time of its creation, the ULNE identity will already be in place through a unique affiliation for scientific publications as well as Ph.D. and Master diplomas of the Graduate Schools. Given the size and diversity of the target University, the agility required to implement the ULNE's strategy can only be achieved through decentralization and strong autonomy on the part of its constituent bodies. The target model will be benchmarked with the organization of other world class European and international universities, such as KU Leuven or Cornell University. The statutes and responsibilities of the target university will be regularly discussed between the members of the consortium. This co-construction will benefit from the experience gained by the partners during their merging processes. The State will have to open doors allowing the success of this original and ambitious project gathering together University, « Grandes Écoles », and healthcare institutions, in strong interaction with research organizations.

10-year target

Under the assumption that the statutory developments required to create the ULNE have been made possible: by 2022 the ULNE will have been effectively created and we will be able to start setting it up (Figure 6). The benefits of the I-SITE project (T0 to T0+4 period) will give it instant international visibility. Each constituent body will have pre-defined decision-making power that will contribute to the autonomy and agility of the overall organization (common strategy and autonomy of its constituent bodies within a pre-defined sector) in order to efficiently implement the strategy defined at the corporate level. The I-SITE ULNE foundation will be maintained in ULNE to promote excellence.

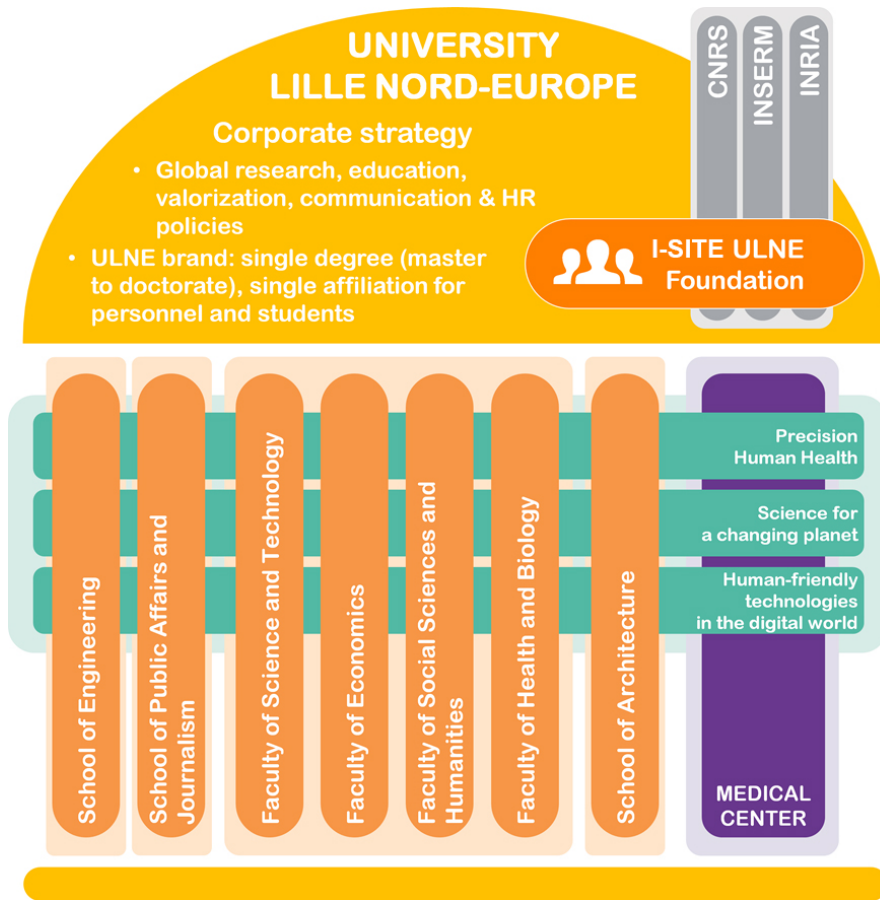


Figure 6: ULNE prospective organization: 10 years target

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I-SITE ULNE

AMENDED PROJECT

Strengths: projected development over time

Tab. J. - Main themes

		Current state	Situation in 4 years	Situation in 10 years
Hub of Excellence Precision Human Health	Level	915 articles per year (increase of 25% over the last 4 years)	1 300 articles per year	1 600 articles par year
		Excellence ²¹ : 4.5% articles in top 1%	6%	10%
		Visibility: 13.2% articles in reviews IF > 10	17%	20%
		Impact: 20.7% articles in top 10%	24%	30%
		5.5 % of researchers in SSH	10%	30%
	ERCs: 3	12	24	
		ARWU ranking in Clinical Medicine and Pharmacy: no ranking	51-75	41-50
	Workforce	Permanent researchers: 440 ²²	600	900

²¹ InCites Dataset updated 2016-09-23. Includes Web of Science content indexed through 2016-07-29.

²² UMR 8199 Génomique Intégrative et Modélisation des Maladies Métaboliques, 1011 Récepteurs nucléaires, maladies cardiovasculaires et diabète, UMR 1190 Recherche translationnelle sur le diabète, UMR 1167 Risk factors and molecular determinants of aging-related diseases, UMR 8576 Structural and functional glycobiology unit, UMR 9193 Sciences Cognitives & Sciences Affectives, UMR 1172 Research Centre Jean-Pierre Aubert, UMR 1171 Troubles cognitifs dégénératifs et vasculaires, UMR 8204 Centre d'Infection et d'Immunité de Lille, UMR 995 Lille Inflammation Research International Center, UMR 2694 Santé publique: épidémiologie et qualité des soins, Cancer CHU Lille, UMR8161 Approches Génétiques, Fonctionnelles et Structurales des Cancers, UMR-S 1172 Centre de Recherche Jean Pierre Aubert.

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	involved	Ph.D. students: 327 ²³	490 (50% increase of the number of Ph.D. during the first 4 years)	980 (multiply by 3 the number of Ph.D.)
	Impact	Spin-off creations: 70 in total since 2000 (Eurasanté bio incubator)	30%	50%
		International or Joint Research Laboratory ²⁴ : 10	20	40

		Current state	Situation in 4 years	Situation in 10 years
Hub of Excellence Science for a Changing Planet	Level	635 articles per year (increase of 5% over the last 4 years)	760 articles per year	1 000 articles per year
		Excellence ²⁵ : 1% articles in top 1%	2%	6%
		Visibility: 3% articles in reviews IF > 10	5%	10%
		Impact: 11.3% articles in top 10%	15%	20%
		15% of researchers in SSH	25%	35%
		ERCs: 3	12	24

²³ Number of Ph.D. students enrolled in 2014 at the Doctoral School "Biologie et Santé" in Lille University.

²⁴ Number of UMI, LIA and Joint Research Labs.

²⁵ InCites Dataset updated 2016-09-23. Includes Web of Science content indexed through 2016-07-29.

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		ARWU ranking in Chemical Engineering & Material Science & Engineering: 151-200	101-150	51-75
	Workforce involved	Permanent researchers: 490 ²⁶	600	850
		Ph.D. students: 302 ²⁷	455 (50% increase of the number of Ph.D. during the first 4 years)	906 (multiply by 3 the number of Ph.D.)
	Impact	Spin-off creations: 44 in total since 2002 (Cre'Innov incubator)	30%	50%
		International or Joint Research Laboratory ²⁸ : 9	20	40

		Current state	Situation in 4 years	Situation in 10 years
Hub of Excellence Human-Friendly	Level	638 articles per year in mathematics, physics, micro-nanotechnologies	830 articles per year	1 080 articles par year

²⁶ UMR 8518 LOA Labo optique atmosferique, UMR 8522 PC2A PhysicoChimie des Processus de Combustion et de l'Atmosphère, UMR 8523 PhLAM Laboratoire de Physique des Lasers, Atomes et Molécules, UMR 8516 LASIR Laboratoire de Spectrochimie Infrarouge et Raman, ICARE Cloud-Aerosol-Water-Radiation Interactions, EA 4493 LPCA Laboratoire de Physico-Chimie de l'Atmosphère, SAGE - Sciences de l'atmosphère, génie de l'environnement, UMR 8207 UMET Unité Matériaux et Transformations, UMR 8198 Laboratoire de Génétique & Evolution des Populations Végétales, UMR 8181 Unité de Catalyse et Chimie du Solide, Eco-Efficient Products and Processes Laboratory UMI 3464 E2P2L, UMR 7378 LG2A laboratoire de glycochimie, des antimicrobiens et des agroressources, UMR 8019 LIA CLERSE, Institut Charles Viollette, CRISTAL UMR 9189,

²⁷ Number of Ph.D. students enrolled in 2014 at the Doctoral School "Sciences de la Matière, du Rayonnement et de l'Environnement" in Lille University.

²⁸ Number of UMI, LIA and Joint Research Labs.

CALL FOR PROPOSALS
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I-SITE ULNE

SELECTION PHASE

AMENDED PROJECT

Digital World		Excellence ²⁹ : 0.7% articles in top 1% Visibility: 1.8% articles top 2% journals Impact: 9.6% articles in top 10%,	1.5% 3% 12%	4% 8% 20%
		430 conferences per year in Computer Science and Social Sciences and Humanities	500	750
		20% of researchers in SSH	25%	35%
		ERCs: 5	20	40
		QSWU ranking in Electrical & electronic engineering: 101-150	76-100	51-75
	Workforce involved	Permanent researchers: 345 ³⁰	560	700
		Ph.D. students: 517 ³¹	780 (50% increase of the number of Ph.D. during the first 4 years)	1 550 (multiply by 3 the number of Ph.D.)
	Impact	Spin-off creations: 100 in total since 2009 ("Start by Euratech" incubator)	30%	50%
		International or Joint Research Laboratory ³² : 5	8	22

²⁹ InCites Dataset updated 2016-09-23. Includes Web of Science content indexed through 2016-07-29.

³⁰ PhLAM UMR 8523, IEMN UMR 8510, CRISTAL UMR 9189, Laboratoire Paul Painlevé UMR 8524, INRIA Lille Nord Europe, Sciences Cognitives & Sciences Affectives SCALAB UMR 9193, Institut de Recherche sur les Composants logiciels et matériels pour l'Information et la Communication Avancée IRCICA USR 3380, Savoirs Textes Langage STL UMR 8163, Maison européenne des Sciences de l'homme et de la société MESHs USR 3185, Centre d'Etude des Arts Contemporains CEAC EA 3587, Institut de recherches historiques du Septentrion IRHIS UMR 8529.

³¹ Number of Ph.D. students enrolled in 2014 at the Doctoral School "Sciences pour l'Ingénieur" in Lille University.

³² Number of UMI, LIA and Joint Research Labs

3.4 MEANS

The consortium, the external partners and the associated socio-economic contributors will gather the human and financial resources to achieve the objectives of the I-SITE ULNE. The breakdown of the I-SITE ULNE funding per type of actions is highlighted in Figure 7 below:

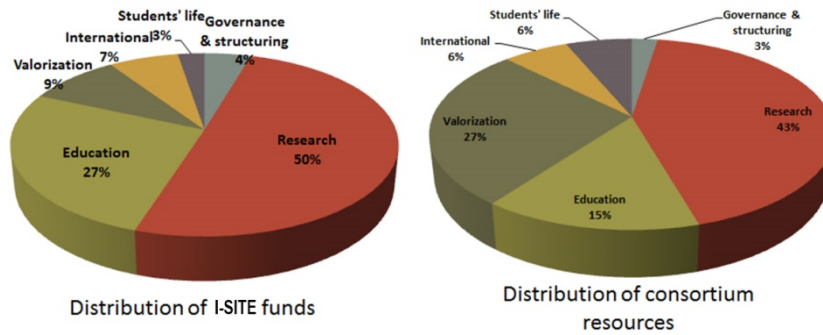


Figure 7: Distribution of I-SITE funds [15.42 M€ / year] per categories (left), distribution of consortium resources [1 145 M€] over 4 years (right)

Over the 4 first years, the financial leverage effect reaches a multiplier factor of 18 considering the 61.7 million euros of I-SITE funding (4 years) versus the 1 145 Million euros of total contribution from the consortium, the external partners and the socio-economic stakeholders.

- In total and over 4 years, **consortium members** and the **external partners** will mobilize resources up to 1 145 million euros (including PIA 1 & 2 projects) representing in-kind contributions from academic and administrative staff, co-financing for projects and Ph.D. scholarships, investments in facilities and equipment for researchers and students;
- The **Hauts-de-France Region** will allocate 254.3 million euros to the I-SITE ULNE over the 4 first years coming from the Region's budget and from the European Structural Funds programme ERDF and ESF;
- The **Métropole européenne de Lille** will contribute to the Initiative by allocating 60.7 million euros during the first 4 years;
- The I-SITE ULNE mobilizes a strong support from the **private sector** with 190 companies that have signed a written commitment for up to 74.4³³ million euros for co-funding I-SITE actions.

The following Figure 8 illustrates the total resources distributed by type of contributor.

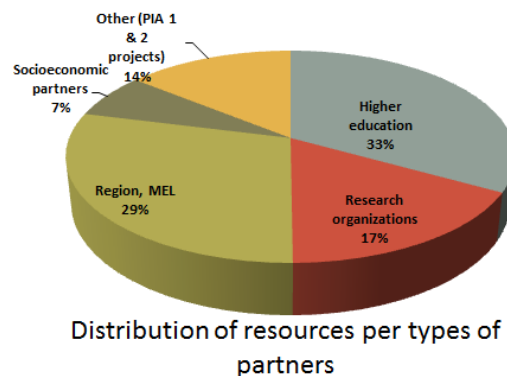


Figure 8: Distribution of resources per type of partners

³³ To the date of 25/11/2016

3.5 HUMAN RESOURCES

Talent attraction policy

The human resources strategy has three different complementary targets. I-SITE ULNE will first reinforce its attractiveness at the highest international level. Next, it will pro-actively identify and accompany existing and future talents. Finally, it will give priority to and strengthen an alumni network strategy.

Talent attraction policy (detailed in the following tables K, L and M in delta document)

- The I-SITE ULNE will fund an attractive and flexible **postdoctoral program** to recruit high-level postdoctoral researchers;
- The **Tenure track position** will provide to young scientists already demonstrating high potential the chance to further develop using an attractive package;
- The **academic Senior Chairs** will offer an attractive package to experienced, high-level scientists including supplementary income (running costs), a post-doctoral appointment and two Ph.D. contracts. External to the consortium candidates for these chairs will be selected on the basis of their proven excellence as well as on the added value provided by their research project to Hubs of Excellence at I-SITE ULNE.

Instill a culture of talent recognition and nurture existing talents

- The **reduced teaching load policy** will allow professors and lecturers to focus on research, technology transfer or innovation in teaching projects for a period ranging from a few months to several years, depending on the scope of the project;
- I-SITE ULNE will provide **Leave for Research/Education/Thematic Conversion** programme to support researchers to develop a research or a pedagogical project in the thematic of the Hubs of excellence for 6 to 12 months without any teaching involvement, and to have some time to focus specifically on research or education before starting again with both teaching and research;
- To facilitate **outward mobility** to globally renowned universities, long stays abroad within the framework of international collaborations as well as sabbatical leaves will be supported and financed.

Strengthen the alumni network

To reach this goal, students, researchers and professors who carried out all or a part of their studies within the consortium, will be called upon to contribute to the visibility and appeal of the consortium through an alumni program. This objective will be served by the following two actions:

- **Mobility grants** will cover travel expenses and allowances for short stays (researchers and students). The funded projects must demonstrate a sustainable cooperative approach and potential to attract long-term external funding;
- An **official ULNE alumni community** will be created and developed by providing mentoring and opportunities for consortium students and academic staff.

Tab. K. - Post-doc

Post-doc	
Recruitment procedure	Recruitment procedures and selection processes are carried out by each laboratory or research team. Each respective institution ("tutelle") is in charge of the funding [most of the time external funding such as national (ANR) and European (H2020, FEDER) grants, public-private partnership].
	I-SITE ULNE harmonizes recruitment procedures and selection processes among the consortium members using criteria already applied in the LABEX projects: international publication of the postdoc position, external candidates only (for admissibility), and excellent <i>curriculum vitae</i> (mobility, publications).
Type of contract (and name of employer)	A fixed-term contract for typically 12 months is currently used for the contractual relationship between the postdoctoral researcher and the institution in charge of the funding.
	I-SITE ULNE provides fixed-term contracts for 12 to 36 months depending on the associated project. The postdoctoral researcher is employed by the I-SITE ULNE Foundation and ultimately by the target University: ULNE or by the research organizations (CNRS, INRIA, and INSERM). This long-term contract provides opportunities for postdoctoral scientist to establish their own research programme in line with the Hubs of excellence.
Remuneration policy	The remuneration policy is currently variable according to the institutions, with an average of 45-50 K euros gross per year.
	The I-SITE ULNE Foundation recruits the candidate and provides greater flexibility in the salary range to develop an attractive remuneration policy to recruit high-level postdoctoral researchers. It also provides significant support to the postdoctoral researcher offering opportunities for early career researchers. Their performance in terms of research productivity, ability to obtain grants and autonomy in research activities is evaluated part-way through the postdoctoral period.

Tab. L. - Tenure track

"Tenure track" actions or arrangements	
Recruitment procedure	There is currently no tenure track procedure: assistant professors are hired as permanent members of the institution after a probation period of one year. A procedure launched by INRIA in 2016 shares some similarities with the TT: The Starting Research Positions offered to candidates with a three-year contract (promotes attractiveness, selection and remuneration).
	The tenure track recruitment procedure and the selection process includes criteria such as a 3 to 10-year experience in research after the thesis, a teaching experience, no age or nationality conditions, excellent <i>curriculum vitae</i> (including mobility, publications, and valorization).
Type of contract (and name of employer)	Current: n/a
	The I-SITE ULNE Foundation recruits the candidate and provides fixed-term contracts for 5 years. The tenure track assistant professor will be employed by the Foundation ultimately by the target University: ULNE.
Duration of procedure	Current: n/a
	The tenure track is set up on a 5-year period, with mid-term assessment. The duration of the tenure track is extended by 18 months per children for woman to encourage women to apply and to pursue their careers in research.
Remuneration policy	Current: n/a
	The I-SITE ULNE Foundation recruits the candidate and thus provides greater flexibility in the salary range to develop an attractive remuneration policy to recruit high-level researchers. The remuneration is equivalent to that of a professor (about 65-75 K euros).
Career management	Current: n/a
	The performances of the tenure track assistant professor in terms of research productivity and teaching, ability to obtain grants and autonomy are evaluated during the tenure track under the supervision of the steering committee (with

	mid-term assessment). At the end of the tenure track, assistant professors with good evaluation will have the opportunity to get a permanent position (to become an assistant professor with tenure). The consortium anticipates and locks permanent position availability.
Planned environmental measures	Current: n/a
	The tenure track position includes an attractive package such as access to I-SITE ULNE funds and environment, as well as the specific supports to apply for competitive external funds including H2020, ERC and ANR grants, mobility funds.

Tab. M. - High scientific and technical potential

High scientific and technical potential (academic Senior Chairs)	
Recruitment procedure	Recruitment of permanent academic staff is currently performed using the usual National recruitment procedures (first selection at National level based on a written application: qualification the "Conseil National des Universités (CNU)". a second step includes filing of an application and audition of the candidate by the University of choice).
	The selection process is based on criteria of excellence in line with the Hubs of Excellence, including research and teaching experience, publication track-record, and quality of the proposed research programme. Laureates are selected by the I-SITE ULNE steering committee on the quality of the application, based on a proposal by a hiring committee specifically composed for each position (consisting of experts from the Hubs and of external experts).
Type of contract (and name of employer)	The permanent researcher is currently employed by one of the consortium members.
	The I-SITE ULNE Foundation provides additional academic and industrial chairs.
Remuneration policy	Currently, the remuneration policy follows the national salary scale.
	The I-SITE ULNE Foundation recruits candidate and provides greater flexibility in the salary range to develop an attractive remuneration policy,

	especially to recruit senior researchers.
Career management	Currently, the salary scales are fixed on a national basis.
	The I-SITE ULNE Foundation provides exceptional/more attractive salaries over the long-term.
Planned environmental measures	Current: n/a
	I-SITE ULNE Foundation provides an attractive package including supplementary income (running costs) as well as 2 Ph.D. student contracts, and one postdoctoral appointment.

Human resources policy: definition and implementation

The consortium members will coordinate their recruitment and promotion strategies in order to work efficiently towards reaching the I-SITE goals, and more specifically, to extend the Peridex. They will in particular:

- Establish a resolutely proactive talent search by actively seeking staff from all around the world, by mobilizing the consortium's international collaborations and its alumni networks, by grouping announcements and by making better use of international recruitment channels (including journals and portals). Talent spotters will be designated inside the 3 Hubs of Excellence, where fresh resource is needed to extend or to consolidate the existing/developing excellence within the consortium. In addition, all the members of the consortium will act as ambassadors with the mission to identify and to contact putative targets for recruitment. The talent spotters will coordinate these efforts and invite them to present their work and to meet key I-SITE staff;
- Formalize open recruitment principles and guidelines to improve and guarantee the quality of the recruitment and promotion process. This will be achieved by opening calls for applications, ensuring the presence of at least one renowned external expert in each hiring committee, and establishing a significant amount of international experience as a key recruitment criterion;
- Their investment in teaching innovation and technology transfer will be an important criterion in academic staff appraisal.
- The Steering committee will define the HR policy and the Operational Agency will be in charge of the administrative procedures pertaining to the I-SITE human resources actions. This will make sure the I-SITE is reactive. The Steering Committee will decide on the allocation of jobs partially or totally funded by the Initiative. It will select the candidates based on a proposal by a hiring committee specifically constituted for each position (consisting of experts from the Hubs and of external experts). The I-SITE staff will be employed by the Foundation.

The HR policy of the members and external partners in line with the I-SITE will be concerted among the members of the Board (see section 4). Special attention will be paid to ensure swift recruitment procedures and a high-quality welcome procedure for newly recruited researchers, with a view to competi-

tiveness and reactivity. In addition, the consortium is committed to focusing more recruitment effort on the Hubs of Excellence where it is likely to attract more candidates due to the excellence of its teams and their equipment. The target is a minimum of 50% of the 200 permanent jobs filled in the next five years. The Steering Committee will work closely with the consortium's governing bodies to ensure that a common human resources policy is implemented, working towards the above objectives.

3.6 MAIN COMMITMENTS

Tab. N. - Table of commitments

Nature of commitment	Description of the indicator	Target	Date of achievement
Structuring-integration-governance	Finalization of Lille 1, Lille 2, Lille 3 merging	A single University of Lille with renewed pre-figurative faculties of ULNE	January 2018
Structuring-integration-governance	Merging of Centrale Lille-ENSCL-ENSAIT	« On site » prefiguration of the ULNE School of Engineering	2019
Structuring-integration-governance	Merging of École des Mines de Douai and Télécom Lille	Creation of IMT-Lille Douai	January 2017
Structuring-integration-governance	Merging of Science Po Lille and ESJ	« On site » prefiguration of the ULNE School of Public Affairs & Journalism	2019
Structuring-integration-governance	Creation of I-SITE ULNE Foundation with effective governance and operational agency	Statutes are finalized, approved and adopted by all members Operational Agency is staffed, operational and running Facilities are operational	S1 2017
Structuring-integration-governance (branding)	Effective unique affiliation for scientific publications	Proactive strategy to engage the scientific ecosystem: explanations, incentives, corrections Engage discussions with the international ranking Organizations (ex: ARWU)	2018: 100 % (currently 60%) affiliation for scientific publications 2019: Entry in international ranking (ex: ARWU) of unique affiliation
Structuring-	Effective unique affiliation	Engage negotiations with	2018: affiliation

integration-governance (branding)	for doctorate program	National institutions (tutelles)	for doctorate
Structuring-integration-governance	Concerted recruitment and attractive policies for academic staff in the perimeter of the Hubs	Common recruitment charts, approved by members and adopted	2018
Structuring-integration-governance	Precise description of the target integrated "University" ULNE: governance, structuration and functioning	Engage discussions with National Institutions ("tutelles") Principles of ULNE functional organization and governance (level of subsidiarity and decentralization)	2020
Research	Sustain – Hub core and interdisciplinary funds allocated	Funds allocated to 20 projects	Q4 2017
Research	Expand – Open and umbrella projects funds allocated	Funds allocated to 1 umbrella project and 5 open funds	Q4 2017
Research	First Tenure tracks and Senior chairs recruitments	3 Tenure Track staff recruited 1 senior chair recruited	Q3 2018
Research and Higher education	Opening of 3 graduate schools and setting the doctoral incubator Undergraduate, master and doctoral programs	<ul style="list-style-type: none"> • Doctoral incubator on tracks: • Publicity for Graduate school + M and Ph.D. stipends • First Hubs winter & schools • First Master and Ph.D. students: 	<ul style="list-style-type: none"> • Q3 2017 • Q4 2017 • 2018 • Q4 2018
Higher education (graduate school)	Doctoral incubator running on cruise speed	Increase the number of candidates for Ph.D. curriculum +50% of PhD students	2021
Training (innovation and entrepreneurship)	Set-up of CIPN and first allocations to innovative pedagogical projects	Investments in innovative equipment are made Allocation of funds for pedagogical projects	Q4 2017
Training	Use of innovative pedagogical means to develop lifelong training	CIPN equipment & facilities deployed for distance learning	Q4 2017
Socio economic partnerships	First innovation funds allocated to projects	Allocation of funds for ~ 10 projects	Q4 2017
Socio economic	Front Office set-up and	Recruitment of specific staff	Q4 2017

partnerships	operational		
Socioeconomic partnerships	Sustain the creation of joint public-private research laboratories	5 labs sustained by I-SITE staff and funds	2018
International policies	Mobility funds set up to promote mobility of students	100 I-SITE grants allocated to Msc students	Q1 2018
International policies	Effective collaboration agreements with close network: BE Universities: Ghent, Louvain, KU Leuven	Engage discussions with partner Universities to prepare: <ul style="list-style-type: none"> • Students exchange: double diploma, joint degree (implies more than two partners) • Collaborative projects • Co-supervision of Ph.D. 	2018
International policies	Creation of a European campus with Belgium Universities (KU Leuven, Ghent, Louvain)	<p>Sustain & expand collaboration with KU Leuven:</p> <ul style="list-style-type: none"> • Msc dual diploma • Co-supervision of PhD, • Students exchanges, • Joint Lab <p>Expand European Campus to Ghent, Louvain</p>	<p>Collaboration with KU Leuven:</p> <ul style="list-style-type: none"> • Msc dual diploma (2019) • Co-supervision of PhD & Students exchanges, (2018) • Joint Lab (2019) <p>Expand European Campus to Ghent, Louvain (2020)</p>

3.7 DEVELOPMENT OF THE PARTNERSHIPS

Tab. O. - Development of the partnerships

Socio-economic sector	Pathology, Nutrition, Health Technology
Funding (including IP revenues) expected from companies under the "Target University" collaborations	In 4 years: 17 000 K€ per year
Example of an expected flagship result	<ul style="list-style-type: none"> • PRECINASH (RHU): Partnership with pharmaceutical company (SANOFI) to develop biomarkers and candidate drugs for non alcoholic steatoses treatment (NASH) • FAIR PARK 2 (H2020): development of a drug for Parkinson disease treatment • BIOTHEQUE: building of a « one stop shop » in the hospital-university community dedicated to development of clinical and biological database
Expected 4-year growth of funding received	A global increase of 15% vs. 2014 data

Socio-economic sector	Environment, Natural resources, Energy, Chemistry
Funding (including IP revenues) expected from companies under the "Target University" collaborations	In 4 years: 7 000 K€ yearly
Example of an expected flagship result	<ul style="list-style-type: none"> • Set-up of UPCAT platform dedicated to the upscale of catalysts manufacturing (TRL 4-6) to industry • Realization of the « Contrats de plan Etat » including ARCHI-CM and CLIMIBIO. • Realisation of the VEREM project

Expected 4-year growth of funding received	A global increase of 20% vs. 2014 data
Socio-economic sector	ICT, Micro and Nanotechnology, Creative industries
Funding (including IP revenues) expected from companies under the "Target University" collaborations	In 4 years: 3 300 ³⁴ K€ yearly
Example of an expected flagship result	<ul style="list-style-type: none"> • Collaboration with KU Keuven (in the framework of the European Campus): technology enhanced collaborative learning with IMEC-ITEC-KU research teams • INRIA tech platform deployment • Creation of a European research-training-transfer platform on Industry 4.0 (ENSAM) • Start-ups creation: Tera Components & Quiétude Technologies
Expected 4-year growth of funding received	A global increase of 30% vs. 2014 data

Tab. P. - Non-recurrent funding

	Funding (annual average in K€)	Expected growth for the 4 years to come (in %)
Direct research contracts with the companies	19 032	20%

³⁴ Accounting for the change of perimeter (vs application of reference in 2015): yearly contribution 1,4M€ from ENSAM Campus de Lille

CIFRE theses (sum of the salaries and the support contracts)	3 103	20%
Subsidised collaborative research projects ³⁵ (Europe, ANR, etc.)	44 252	20%
Patronage	1 187	20%
Others (specify)	2 743	20%
Total	70 317³⁶	20%

Tab. Q. - Flagship courses

Title of the course	Current headcount if applicable	Nature of audience	4-year target headcount	Nature of audience in 4 years	L, M, D or NQ
Healthcare engineering, options "Healthcare business and clinical research" "Environmental and professional risk assessment and management " "Risk, quality and flow management in health and social care"	189	CDC, CL	230	CDC, CL, SC	M
Nutrition and food sciences	32	CDC, CL	45	CDC, CL	M
Drug sciences	120	CDC, CL	150	CDC, CL	M
Physical and analytical chemistry, option atmospheric environment	22(M2)	CDC	25	CDC	M
Vegetal-based chemistry	Open since sept 2016 10	CDC	100	CDC, CL	M
European Master "Psychology of neurocognitive processes and affective sciences"	20	CDC, CL	20	CDC, CL	M
Nuclear Magnetic Resonance: a compass to Nanoworld	MOOC 1100	CDC, CL	4000	CDC, CL	High Schools, L, M, D
IT, option "Automated learning and big data"	To open in 2017	CDC, CL	20	CDC, CL, SC	M

³⁵ Take the overall grant of the funding agreement.

³⁶ Update considering 2014-2015 data and change of perimeter (vs application of reference in 2015)

CALL FOR PROPOSALS
I-SITE WAVE 2

I-SITE ULNE

SELECTION PHASE

AMENDED PROJECT

IT and Computer Science applied to Business Management (MIAGE), with three top-level options: "e-services", "engineering and management of large software programs", and "IT and new technology projects and engineering"	140 (M2)	CDC, CL	180	CDC, CL	M
Information systems and Decision-making systems, option "Data sciences"	20	CDC, CL	40	CDC, CL	M
Numerical and statistical engineering	14	CDC, CL	20	CDC, CL	M
High performance computing and simulation, advanced scientific computing	10	CDC	15	CDC, CL	M

Governance, organization and steering

4.1 I-SITE ULNE GOVERNANCE

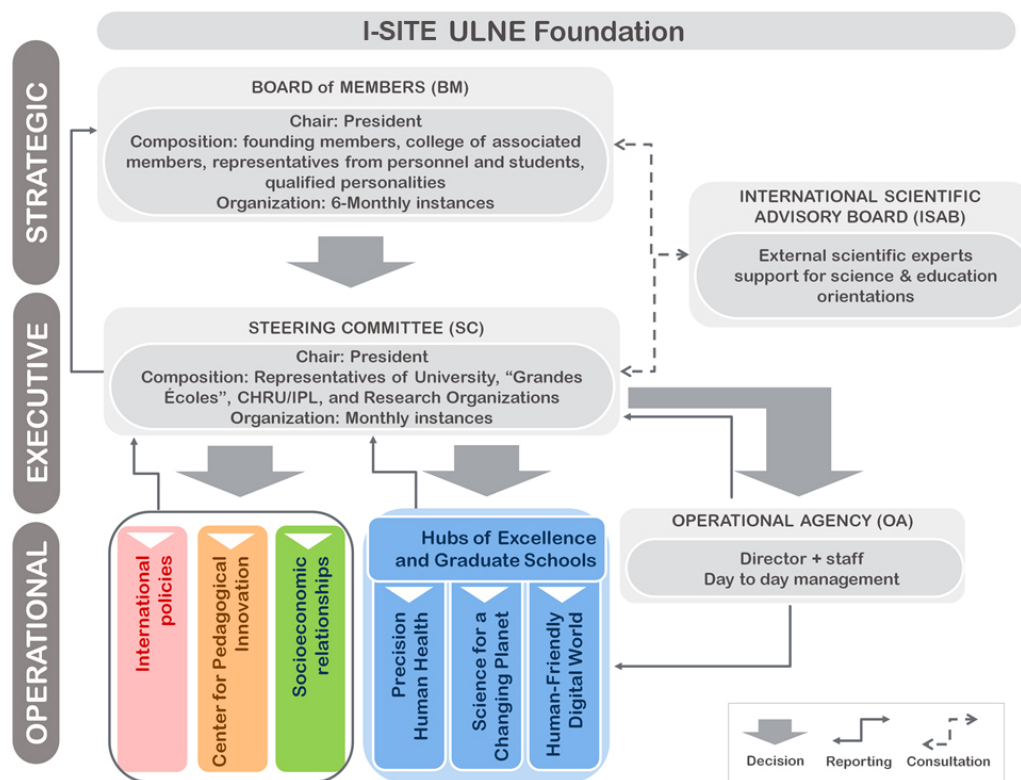


Figure 9: I-SITE ULNE governance

The governance of the initiative is supported by the **I-SITE ULNE Foundation**, created by the members of the consortium. The Foundation ensures the successful implementation of the I-SITE as a catalyst for the construction of University Lille Nord-Europe. The governance of the foundation is built to strengthen cohesion and integration of its members and to ensure their engagement in the transformation project. It is based on the **Steering Committee (SC)**, consisting of a limited number of members (representative from all partners of the consortium), that operates under the responsibility and authority of the President of the foundation. The President is fully dedicated to the Initiative and does not exercise any other mandate. The SC is the decision-making body of the Initiative and validates projects selections and funds allocations. The SC is under the responsibility of the **Board of Members** and both bodies are supported by an **International Scientific Advisory Board** consisting of independent members. The operational execution of the initiative is carried out par the **Operational Agency**, managed by a Director under the responsibility of the President. The President is assisted by coordinators for each of the I-SITE operations: research and higher education, pedagogical innovation, international policies and socioeconomic relationships. The overall organization of the governance is illustrated in Figure 9.

BOARD of MEMBERS (BM) [ORIENTATE & VALIDATE]: its main mission is to validate the strategic and overall orientations of the initiative and drive the overall transformation of the scientific and higher education landscape towards the target University.	
Roles	<ul style="list-style-type: none"> • Is responsible for essential decisions concerning the overall orientation and strategy of the Initiative; • Carries out the political approval and the overall supervision of the I-SITE ULNE programs and actions; • Adopts the annual implementation plan and vote the budget of the initiative; • Is consulted for main specifications and organization principles of ULNE (University target).
Composition	<ul style="list-style-type: none"> • Chaired by the President; • Colleges of: founding members, associated members, representatives from personnel and students; • Qualified personalities (designated by the President).
Organization	<ul style="list-style-type: none"> • 6-monthly instances; • All partners are invited to the BOARD; • Voting rights are weighted by college.

STEERING COMMITTEE (SC) [DECIDE & STEER]	
Role	<ul style="list-style-type: none"> • Steers the initiative, decides on funds allocations and I-SITE actions plans under the responsibility of the President; • Proposes the main specifications and organization principles of ULNE (University target) to the BM; • Evaluates and validates the expansion of the Peridex (new teams entries) and modulate the I-SITE funds allocations to support the overall strategy (yearly revision and update).
Composition	<ul style="list-style-type: none"> • Chaired by the President; • 6 representatives from University, "Grandes Écoles", Research Organizations (CNRS, INSERM and INRIA) and CHRU/IPL.
Organization	<ul style="list-style-type: none"> • Monthly instances; • The President can permanently or temporarily invite non-voting members (e.g. Executive Director, experts); • Voting rights are weighted among the members.

International Scientific and Advisory Board (ISAB) [ADVISE & EVALUATE]	
Role	<p>The ISAB has a twofold role: (i) advisory role to the Board for the scientific and internationalization strategy of the initiative and (ii) independent evaluation of the initiative major achievements:</p> <p>In particular, it will also:</p> <ul style="list-style-type: none"> • Provides recommendations on scientific talents recruited by the I-SITE ULNE (Talent

	<p>funds: junior and senior chairs);</p> <ul style="list-style-type: none"> • Provides recommendations on the actions implemented to ensure the internationalization of I-SITE ULNE (attractiveness measures, measures to increase scientific visibility, international rankings); • Ensures that the members fulfill their commitments through an independent evaluation of the initiative achievements (yearly assessment). <p>A chairman is designated among the members.</p>
Composition	<p>9 academic external personalities (outside Lille and Regional ecosystem) will be designated by the BM. Attention will be paid at:</p> <ul style="list-style-type: none"> • Gathering at least 6 international members • Balancing gender equality
Organization	<p>The ISAB will meet on a yearly basis to review the achievements of the initiative and perform their assessment and the relative recommendations.</p>

Operational Agency (OA) [IMPLEMENT& MANAGE]	
Role	<ul style="list-style-type: none"> • Implements the I-SITE actions decided by the SC; • Manages the I-SITE funds; • Reports to the President and SC.
Composition	<p>Managed by a Director under the responsibility of the President, it gathers the necessary staff and resources to implement the actions decided by the SC.</p>
Organization	<p>The President is supported by coordinators in the running of the main I-SITE missions (research, higher education, international policies, and socio-economic relationships) who will be under his/her responsibility.</p> <p>The Agency sets-up quality management procedure and carries out the reporting to SC and ANR.</p>

4.2 IMPLEMENTATION OF THE INITIATIVE, FUNDS ALLOCATION MECHANISMS

The overall allocation of I-SITE funds will be under the **responsibility of the Steering Committee**. A large part of I-SITE Funds allocation will be executed based on competitive calls for projects that will be evaluated by independent and external experts. These experts will be selected and recruited from a list, which will be validated by the **Steering Committee**. The key feature of these calls for projects will be defined based on:

- **Generic criteria** upon which projects will be selected: these criteria will be carefully defined (for example: scientific excellence, transferability of results down the value chain, interdisciplinary domains, innovation in teaching, quality assurance and internationalization). The goal will be to define a short set of generic and relevant criteria applicable to all the calls for projects with different weightings corresponding to the actions defined in section 3.2 (actions);
- **Oriented research challenges** in order to ensure focus of I-SITE funds on sustaining the excellence inside the Hubs, while allocating a share of I-SITE funds to actions allowing the expansion of this excellence.

Both criteria and research challenges are defined by the Steering Committee.

CALL FOR PROPOSALS
I-SITE WAVE 2

I-SITE ULNE

SELECTION PHASE

AMENDED PROJECT

The Operational Agency concentrates the means and resources to run the initiative: it is staffed with dedicated personnel (coordinators) along with support personnel that will be seconded by the members of the initiative.

Decisions/Actions	SC	BM	ISAB
Strategic implementation plan (research, education, international, socioeconomic, HR)	Proposition in strategic implementation plan validate	Vote according to BM quorum rules	Advise
Definition of annual competitive calls rules (topics, criteria)	Proposition in strategic implementation plan validate	-	Advise
Voting of I-SITE annual budget priorities	Proposition in strategic implementation plan validate	Vote according to BM quorum rules	Advise
Recruitment of scientific talents (junior & senior chairs)	Propose and validate	-	Advise
Evaluation & scoring of projects	Validate	-	-

Operational layer: day-to-day implementation

Decisions/Actions	SC	OA
Organization of competitive calls	Decides rules, calendar, composition of independent experts	Organize calls, applications collections, evaluation process
Evaluation & scoring of projects	Validate ranking and list of laureates	Organize evaluations with independent experts and present scoring and ranking to SC
Ph.D. & Post doc recruitment in I-SITE funded project	Select candidates ³⁷	Organize evaluation of candidates
Funds allocation	Validate and allocate funds	Execute and manage funds transfers

Table 1: decision making and means allocation processes

As the I-SITE ULNE will be first launched by a specific legal vehicle (I-SITE ULNE Foundation), we have established the following convention regarding the following table:

- Column “already transferred”: means the competence that will be already transferred in April 2017 to the Foundation for the launching and implementation of the I-SITE;
- Column “transferred in 4 years”: at that time, the target University will not be created yet, competences transferred in 4 years will be transferred to the foundation.
- “Transferred in 10 years”: by that horizon, ULNE will have been created.
- Note: the proposed schematics vision of ULNE in 10 years (Figure 6) is helpful when going through the following table:

³⁷ Doctorate schools directors will be involved in the process

Tab. R. - Competence assignment

Competences	Distributed	Already transferred (to the Foundation in 2017)	Transferred in 4 years to the Foundation	Transferred in 10 years to ULNE
Recruitment of permanent staff	X	Partial transfer: in the peridex, tenure track staff is recruited by the I-SITE ULNE foundation	I: (Partial transfer) in the peridex, tenure track staff, academic and industrial chairs are recruited by the I-SITE ULNE foundation	U: (Partially) subsidiarity principle will apply to ULNE entities that will have the possibility to recruit their staff in a general framework defined by ULNE corporate.
Remuneration of permanent staff	X	Partial transfer: in the peridex, tenure track staff is recruited by the I-SITE ULNE foundation	I: (Partial transfer) in the peridex, tenure track staff is recruited by the I-SITE ULNE foundation	U: (Partially) subsidiarity principle will apply to ULNE entities that will have the possibility to recruit their staff in a general framework defined by ULNE corporate.
Resource management	X	Partial transfer of resources for Peridex and for PIA projects	I: Partial transfer of resources for Peridex and for PIA projects	U: will be defined in the specifications and organization model elaborated by the Board at T4.
Research contracts management	X	-	I (Partial): Regional, National, European contracts in the peridex	U: will be defined in the specifications and organization model elaborated by the Board at T4.
IP management	-	Partial transfer (limited by existing agreements with research organization) of patent portfolio management to SATT	I: Transfer concerning the peridex (limited by existing agreements with research organisms) of patent portfolio management to SATT	U: transfer to SATT or corresponding entity existing aside or integrated in ULNE
Partnerships management	X	-	I: all partnerships in the peridex (except	U (partial): to "ULNE corporate" for top

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I-SITE ULNE

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AMENDED PROJECT

			those already managed by SATT and otherwise specified by agreements with national organization)	down & strategic partnerships ULNE entities will manage their partnerships according to subsidiarity principles
International relations (IR)	X	-	I (partial): IR in the peridex	U (partial): ULNE corporate for strategic top down IR ULNE entities will manage their partnerships according to subsidiarity principles
Ph.D. students registration	X	None for the foundation but for Lille University in 2018	I (partial): ULNE Ph.D. label in the peridex	U: ULNE Ph.D.
Master students registration	X	Partially (according to on-going merging processes)	I (partial): ULNE Graduate school label in the peridex	U: transfer to ULNE regarding the Graduate Schools perimeter. Outside graduate school perimeter, done in entities
Bachelor students registration	X	-	Not transferred: registration done in entities	Not transferred: registration done in entities
Students management	X	Partially (according to on-going merging processes)	I (partial): ULNE Graduate school label in the peridex	U: transfer to ULNE regarding the Graduate Schools perimeter. Outside graduate school perimeter, done in entities
Diplomas awarding	X	-	I: ULNE label, in the peridex (derogation will be requested to National institutions)	U: Msc (in Graduate Schools) and PhD delivered by ULNE. For the other cursus, this will be defined in the specifications

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				and organization model elaborated by the Board at T4.
Research policy	X	Partial transfer: site policy with Research Organizations, Unique affiliation for scientific publications	I (partial): common policy for the peridex, unique affiliation for scientific publications	U: ULNE corporate will define the research policy axes
Doctoral schools	Thematic integrated doctoral schools involving all partners of the consortium	-	I: Concerted recruitment with existing doctoral schools (Graduate Schools)	U: ULNE common affiliation for doctorate among the consortium members
Organization of teaching and educational activities	X	Common organization between Universities and GE for master for example.	I (partial): Graduate schools & Doctoral incubator (in the peridex), CPDI (Center for Pedagogical and Digital Innovation)	U: ULNE will define the ground rules for the graduate schools Subsidiarity will apply for entities