

Hors-série

OCTOBER 2014

Donnons un sens à l'innovation de la Consideration de la Considera

Special issue UTC Innov All articles published in *Interactions* 2007-2014

FROM THE PRESIDENT'S DESK



This special issue of Interactions groups together all the articles published in since 2007 on the 'Innovation'

thematic. It stands witness to the tremendous momentum achieved by UTC and the surrounding Compiègne and Picardie territories on the topic, raising its status to now become the third mission of our University: transforming knowledge and know-how produced at UTC, by its students and research staff in innovative products and services of every shape and form (technological. of course but also innovation in social spheres, in organization and end-user fields...) though an intelligent mobilisation of all the actors in the local innovation and creativity eco-system that unites the University, Enterprise and Local Territorial Authorities.

Numerous examples are recalled in these pages, all of which led to creation of start-ups (over 200 in 15 years) often established by the UTC undergraduates and graduates. You will learn how the Innovation Centre was conceived, designed and became an operational unit in our UTC eco-system and likewise you will hear the points of view of academics, industrialists and politicians in terms of the conditions they saw as necessary to ensure success for emerging and efficient innovative schemes in the region. You will also be invited to note the decisive commitment of the

Picardie Region authorities (notably as a partner to Picardie Technopole and in the so-called Intelligent Specialised Strategic Plan) and also the ARC that contributes to the territorial, socioeconomic development of the Compiègne area as a whole, amply proving its attractiveness for new partners and its inherent creativity.

Let me just wish all our readers an excellent start to the coming academic year and, I add, "Vive l'innovation", as a truly action-intensive lever to be used by University to serve the Economy and Society at large.

Prof. Alain Storck UTC President & Vice-Chancellor



UTC has opened an Innovation 'hub', unique in France. The Centre houses numerous laboratories all of which are at the cutting

edge of their specialty, ranging from a studio that can detect movement, to the "fablab" with its 3D printer stations, the virtual reality room, the workshop for vehicles of the future, the entrepreneurial area and the 'wet lab' for agro-food developments, the Centre is a higher education establishment designed to impulse and enhance the desire to create, innovate and meet others in the same vein

Bruno Ramond

Director UTC Innovation Centre

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5/ How the UTC Innovation Centre came to be

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From the mid-2007 prototyping phase to the inauguration ceremony October 15, 2014

The innovation center was built thanks to financial support from :











Interactions interactions.utc.fr

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#10 March 2010

COMPETITION

The first projects certified by the UTC Innovation Centre

UTC's new Innovation Centre is a pedagogical unit, open to the 'real world' problems and is organized as a support for research, for training and technology transfer – i.e., converting ideas into prototypes. In the Autumn of 2009, UTC organized a competition of innovative projects offering the laureates an accompaniment and access to logistics and a certification from the UTC Innovation Centre as to their attested high quality and potential. Here are three examples that illustrate the diversity and originality of the valorisation work carried out in this conducive eco-system.

An access to drinking water for all

Today's headlines constantly demonstrate that drinking water is becoming a rare commodity. The planet's needs in water are becoming more acute - one billion of the Earth's inhabitants do not have direct access to drinking water. In this context, a UTC undergraduate project calls for design of smallscale desalination units. The latter will be able to produce between 300 to 500 m³ per day, enough to satisfy a local population of some 3 000 inhabitants. The units

would be totally autonomous and have their own energy source. "The long-term objective is to propose an innovative and sustainable solution that respects the environment and employs renewable energies - the target is populations that really need water notably drinking water", explains Mehdi Berrada. student engineer who originally proposed the project. The team plan to build a prototype.

Direct, mobileto-mobile communication

Booking a taxi, geo-localizing a friend, at a terrace of a café, forwarding a virtual business card, posting an alert for an imminent car-share departure... these are actions that are already possible today using as a smart-phone, or over a social network such as Facebook®, Twitter® or Viadeo®, but they could all soon be instantaneous and especially spontaneous. How could this be done? "By direct, mobile to mobile communication without a need to go via an operator or

an operator or
a telecomm
network", says
M o h a m m e d
Shawky, research
scientists and
lecturer at UTCHeudiasyc. "In other



words. two persons whether they know each or not - it doesn't really matter - can communicate by simply being close or in physical contact, and exchange information that they want to access and share". This is a technology developed at UTC, many potential applications and could open the way to more spontaneous forms of communication.

Tactile screens under scrutiny

A new type of video game – at the cross-roads of two innovative trends – could soon be on the market. "To be more precise", says Nicolas Espo-

sito, a research scientist with Costech and lecturer who first proposed the ideas "when tactile interfaces intended initially for partially blind persons are used in alternate reality and technologies that mix the mechanical aspects of a video-game and the real world situations". The players use mobile hand-sets that accept both tactile and non-tactile interactions. will be using the real world as their playing field. As Nicolas Esposito sees it, "these new gaming features correspond to a need for proximity and augmented sensory links that we do not have

in a purely virtual world". Other applications – such as the accessory

Marketing strategy in favour of innovation

Most engineering schools and universities today propose teaching modules in entrepreneurship and innovation management, including a strong emphasis on cause-related logic. Innovation is presented as the development of new methods and/or means to attain a pre-set objective. The new UTC **Innovation Centre plans** to analyse innovative processes in a 'reverse' manner, whereby the objectives are determined by the means available.

that can be added to a mobile phone proposing 'enriched' tactile inputs and outputs are currently under study.

#11 May **2010**

UTC IN THE NEWS

TATIN - **interactive table** on show at the Composites Festival

UTC demonstrated its TATIN interactive table at the 13th Edition of the Composites Festival, i.e., the festival of digital arts and stage scenery setting, April 20 to June 2010 at the Jean Legendre Hall (Compiègne). The research work, in the framework of a student project supported by the UTC Innovation Centre, consists of a large dimension, multi-point interactive table designed to assist and foster preliminary collaborative design work.

COMPETITION

Do you want to step up $innovation\ mode\ ?$

As a major player in preliminary collaborative research, UTC's innovation Centre will be organizing its second competition for innovative projects in 2010.



elf-driven drones, powdered water, an ecological yacht, next generation video games, the Tatin interactive table concept ... these are some of the projects that have been certified 'viable' bug the UTC Innovation Centre and which introduce a transverse view-point for technological research, as developed at UTC bringing

together various skills in sciences, technology, the arts and culture... "The UTC Innovation Centre already has attracted a number of SMEs, local authorities, lectures and research scientists, undergraduates, artists ... it constitutes an innovation intensive eco-system that creates a dynamic impetus around research activities and training programmes

demonstrates vitality and skills that exists at UTC in the fields of innovation", underscores Pierre Gohar, UTC Director for Valorisation and Partnerships. Six projects have this far been financially supported by the UTC Innovation Centre since the latter was created and benefit from appropriate logistic aids. Following suit to the success of the first edition, a second competition for innovative projects will be organized in Autumn 2010

INNOVATION

Safety matter in horse-riding

A student initiated project was certified by the UTC Innovation Centre early this year. The system developed aims at improving on safety in horse riding when the horse is engaged in fence-jumping events. A prototype been designed, assembled and tested on several occasions at the Compiègne riding club. Interactions spoke to Sophie Dossal, behind this project and today, after graduating, hired as preventive maintenance officer with Senoble. UK.

How did this innovative project come to be?

The first point is that horse-rising is a sport where accidents are common-place. There are even fatal accidents every year. And as I myself am an amateur horse-woman, it seemed obvious to that there were not many safety devices for this area of activities and they tended to cost really a lot. The alternative approach I studied was to be less expensive and be adaptable to all sorts of jump-equipment:



cups, posts, fence-bars, stacks ...

Tell us, Sophie, what exactly is your project?

When you are engaged in jumping events, the main risk is when the bar is "jammed" in the cups when the horse inadvertently hits it during the iump. In other words, if the bar does not fall immediately the horse can be destabilized and upset the gate completely, or can fall and take the rider down as well. The idea I had was to ensure a simultaneous bar fall. via a safety add-on with a magnetic release when the horse hits the bar, the bar and cups fall together.

What has been the added value of the UTC Innovation Centre's certification for you?

Well, the fact that my project was certified implies that it will be 'followed' by lecturer research staff at UTC, with appropriate, adapted logistic and financial support. Thus, even if the idea of setting a company is not yet among my priorities, I do hope that in a more or less long term, the system will be approved by the International Equestrian Federation (IEF) and adopted for use in horse-riding events and equestrian clubs.

#15 November **2011**

GLASS VALLEY

« Mock Project » :

How do you reinforce and improve the competitive edge of an industrial branch?

"Glass Vallée" lies at the frontier between the French regions Haute Normandie and Picardie, and is a structure designed to federate 65 companies with over 7 000 highly qualified employees. Over 75% of the world's production in luxury (perfume, liquors, pharmaceuticals ...) bottles are produced here.

since economic crisis in 2009". relates Alioune Badara Deme, a graduate engineer working at UTC's Innovation Centre, The "Glass Vallée" leadership has come under the fire and growing competition of emerging countries in this particular market niche". Having observed this trend. there was a joint agreement between Regional authorities, in

led LGV-UTC INNOV+. This is a collective effort, targeting the SMEs, aimed at reinforcing and improving the competitive edge of Glass Vallée through corporate co-operation in the area. "It is worth noting", says Julien Bahain, the UTC engineer in charge of the

ject, "that the Glass Vallée has the skilled jobs, in glass making, glass casting and blowing, fusing, machining and adding finishing techniques, sorters, model designers ... all of which are needed together and working as a synergy towards new project definitions.

There was a preliminary assessment phase with UTC and the enterprises concerned. to see what the specific problems areas and needs were. "These meetings enabled us to map out the scene, and ob-

collaboration

with UTC, under the

provisions of a plan cal-

tain an overall diagnostic analysis of how information and matter flowed between the various Glass Vallée actors", stressed Alioune Badara Deme.

Several recommendations were proposed to the partners to collectively improve the processes and key skills that exist in Glass Vallée". Now the companies must

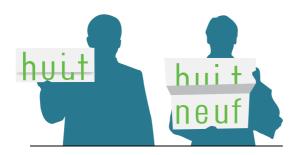
determine whether the actions proposed by the UTC Innovation Centre were efficient or not. "This new field assessment will be done in what we have called the Mock Project" something close to the note of a "mock" exam, thought up by UTC and directed to a project to produce a high quality Glass Vallée model implementing bottle. the recommendations of the two UTC engineers. "This will be the opportunity for us and them to demonstrate a dynamic form of co-operation to which the partner enterprises in the sector will have all contributed." The project calls for the production of several thousand copies of a luxury bottle "MADE IN UTC".

#19 Decembe **2012**

AN INNOVATIVE PROJECT

9/2 = 8

A new generation software package designed to allow you to play with an alphabet.



Did you know that 8 can be the ½ of 9? This is what the ALIS Show proposes - in close collaboration with UTC's Costech Laboratory in the context of a recreational research project. "The Separation" offers ways to generate innovative uses of the alphabet; it is partly comes as 'a live show' and partly integrates digital technologies. The project is a follow-on to an artistic creation from the early 2000s, entitled « La Poésie à 2 mi-mots » [a pun in French which translates

as "Half-word poetry"]; Hélène Cauble, the Project's Artistic Director explains: it uses a software "that allows you to cut words horizontally and to associate the resulting halfwords with others, to form new words". The 'show' has already been produced in theatres in France and abroad and could soon undergo development phase. with additional functions and the possibility to open to a wider public via use of other multimedia. "Our first idea here is to improve the software so that it can 'migrate' to other digital support media", explains Pierre Fourny, who invented the concept of Halfword poetry. "We are now envisaging a development of an application for pads, specially aimed at the educational games market sector, with appropriate technical logistics and financial support via the new UTC Innovation Centre who have just approved and labelled our project". "The Separation" has already been selected to appear at several international 'digital' festivals in 2013 (e-poetry, ELO...). "The Separation" will be able to play with the alphabet for some time to come!

AN INNOVATIVE PROJECT





Every musician knows that, for the moment, there are no self-explicit, complete websites for musical scores, videos, tablatures, etc. Now, thanks to JellyNote, a special social platform created by 3 friends, including Arthur Lenoir and Adrien Cognée, UTC graduates in Computer Sciences and Applications is offering an on-line solution.

rthur is a pianist. Adrien plays the quitar third man, Baptiste Poirier, is not a musician. « Arthur adds, with a smile "We shall probably test new beginner solutions on him!" The story goes back a couple of years when, in a web data mining course, Arthur developed a research engine to find musical automatically generated from MIDI files on the Internet. The project was then called Dionysos and received a pre-label qualification from UTC's Innovation Centre. "That project gave me a clear vision of errors and gaps in the web offer for musicians. And as Adrien and I dis-

cussed matters, it trans-

pired that there was a real

opportunity here to set up an efficient web site to do the job" says Arthur. JellyNote brings together and lists scores, videos and tablatures as posted by Internauts that help simplify practice with musical instruments. Pay-as-you-go applications will soon allow JellyNote to earn some income, as the team prepares the next versions of JellyNote, including sponsored links, to outlets for concert seats, new albums, new tools, etc. "We are currently developing interactive scores that are synchronised in real time with the partition played by the on-line musician. JellyNote will be able to detect wrong notes, record and store parts played and approved by the musician on

line, etc. This way we think we can come up with some interesting tools for music teachers". explains Arthur. The proiect convinced the selection jury of the start-up accelerator "Le Camping", in Paris. JellyNote was accompanied for a six-month period that is proving decisive to their future. So far JellyNote has registered 30 000 "web clicks" in January, the target being 500 000 for year 2013; hopefully, JellyNote will become the Deezer of musical scores. The selection committee of UTC's Innovation Centre showed that they had an excellent intuition when they prelabelled Dionysos.

www.jellynote.com

#21 April 2013

AN INNOVATIVE PROJECT

Innovation: focus on three UTC label award projects

Through its in-house label awards, the UTC Innovation Centre encourages ideas that will mature tomorrow and become commercial and industrial realities. Interactions singles out 3 examples for the readers:

Vibration Communication



Imagine you are a private detective, and your target takes a wrong turn. How do you discreetly warn you colleague, hunkered down a few streets away? The answer is a Feeltact bracelet that allows you to communicate by vibration. The bracelet has 4 vibration points, which when activated deliver a message in a language that is known only to the users. For example, a circling effect can mean "I need help", or if circling but the other way, this can mean "All is fine", says Thibaud Severni, who promotes Novitact, which received its UTC label in 2010 (specialised in vibration interactions). "The idea in fact came from Nicolas Esposito, a lecturer and research scientist at the UTC Costech Laboratory. After that label award, it was the Innovation Centre that contacted me to take the project further – with a 200 000€ grant to do so", adds Thibaud, who has his UTC diploma in Computer Sciences and is currently employed at and by the Innovation Centre. "With the help of the Centre. we identified a real need for this sort of device and solutions, notably useful in the security sector. We patented the technology and set up the company. I contacted and negotiate with a Finnish supplier to start fabrication and with other prospects to market the product, on an international scale. The financial support by the UTC Innovation Centre comes to an end in May 2013. And because there is, currently, no incubator structure in Picardie, I shall no doubt have to migrate and set up shop in another Region" adds Thibaud, regretfully.

www.novitact.com

Recreating the sound environment using virtual reality (VR)

The second project that is maturing also relates to our senses, but this time to hearing. The so-called Aspic Engine pre-labelled in 2011 and labelled in 2012. is the work of two UTC undergraduates in Computer Sciences, Marc Muller and Ouentin George: both are dedicated 'sound sensitive' enthusiasts. The solution they came up with relates to the computation and treatment of sound waves, for the purpose of assuring a realistic transposition of a sound environment, in a VR (virtual reality) set up. "Our Aspic Engine makes the sound and the sight coherent in a VR situation and replaces long, costly and fasti-

dious methods

- with an efficient, real-time solution, give or take a few almost imper-

ceptible approximations" summarises Quentin. The areas of application are of course video gaming, VR, acoustic prototyping for buildings and urban schemes. etc. These two students are taking a "semester out" to develop their Aspic Engine and hope to use their end of studies project to progress. "We recently presented our prototype at the Laval Virtual Reality venue and the professionals there gave us some very positive echoes. Some of them want to be re-contacted when we can be sure that our software package can be integrated to theirs, in some 6 to 12 months", underlines Marc. Over and above the support form the innovation Centre, in respect to market positioning and intellectual property rights, these two students appreciate the training the have received so far at UTC and the fact that the University taught them, encouraged them to "go it alone".

http://aspic-engine.com

Making identical microcapsules

It is not only the students who present projects. A team from the BMBI Laboratory -(bio-engineering): Anne-Virginie Salsac, Eric Leclerc, junior research scientists with the CNRS and Dominique Barthes-Biesel, UTC professor have invented a device they would like to transfer to the world of industrial applications. "Today, microcapsules are made by emulsion techniques, and this enables you to make them with a wide variety of sizes and specific features. By combining the powerful digital computers we have at UTC for simulations and by experimenting with prototype products, we have developed a technology that we patented in October 2012 that enables production of identical sized capsules that can be characterised in situ", details Anne-Virginie. The invention comes as channels that measure a few microns to several tens of micron in diameter. printed in a transparent organo-mineral polymer, called PDMS (Poly-Di-Methyl-Siloxane), implementing techniques used in electronic circuit making and fixed to a glass substrate. The actual size of the channels produced varies according the properties we are seeking; they are very much in in pharmaceutical use sectors, cosme-

sectors, cosmetics, chemistry at large, etc., to encapsulate high added va-



active substances. "Our label award came just at a time we needed some financial support to conduct a market survey and to identify as well as possible those industrial actors who potentially would be interested in our invention". underscores Anne-Virginie. "We hope to have some positive results before summertime 2013".

webtv.utc.fr/watch_video. php?v=0W4S5YHRYH5M #22 June 2013

AN INNOVATIVE PROJECT

Have businesses found a memory?

Head of the ICI team at the UTC-Heudiasyc Laboratory, Marie-Hélène Abel initiated and began working on the MEMORAe project 10 years ago — labelled end 2012 by the UTC's Centre for Innovation. MEMORAe is a digital platform that allows all data circulating inside a business concern to be properly managed and handled.

no, how does one ao about collecting all the data that relates to a given topic, addressed from a multitude of angles, by numerous persons? This overarching ambition may have its answer in MEMORAe, designed to handle all the data in an enterprise, a university, etc. The information can take the form of a meeting's minutes, or a Word® format document, or be in a tweet or in a chat-room ... all one needs to do is attribute one or several 'notion flags' before it integrates MEMOR Ae data knowledge map where it can also have a 'private' or 'shared' status. A utiliser who wishes information of a given subject will use the research engine to identify the subject matter in the knowledge base and to access all the associate resources without having to change the display tool (pdf. Facebook®, Word®, Internet site explorer, etc.). "MEMORAe is a unique platform which grows as successive research proiects are used to feed its knowledge base. We are collaborating with the Thales Group on development of the project. Thales has the objective to capitalise on information exchanged in the forum type format (forums, wikis, chat-rooms, etc). The platform will itself act as an in-house social network, where the participants can open and join discussions on any given subject debated or exposed", explains Marie-Hélène Abel, With Alstom Transport, ME-

MORAe has been used decision-making aid, integrating all the information related to a technical specification. Since September [2012], the [Picardie] regional project CESACO should hemp rapid and efficient transmission of information among SMEs who use MEMORAe, "Accessing and managing information has become an essential need for all business enterprises, faced with the ever-growing amount of information to hand. A software editing company could transform our project work into a commercial product; indeed, we are expecting results soon from two new projects currently under negotiation".

www.hds.utc.fr/~mhabel www.hds.utc.fr/memorae

EUROPEAN PROJECT

The usefull monitoring to **silver economy**

Have you done your 30 minutes work-out? Have you done your heart training exercises? With movement sensors, you could not procrastinate and your doctor could monitor your progress day-by-day. Frédéric Marin and his research team recently completed their European project PAMAP the purpose of which is to develop tool for gerontology to monitor the physical activities of our senior citizens. Here are some of the team's research subjects, ranging from nerve ending regeneration to virtual reality (VR).

currently obser-"Papy and the associate "Silver economy", the UTC-BMBI laboratory is preparing tools for tomorrow. "This monitoring sysallows vou personalise and to follow re-education programmes accurately. In the framework of the PAMAP project, in a Franco-German-Greek consortium, our lab is responsible for elaborating the biomechanical models to quantify the senior's activities". adds Frédéric Marin. "The clinical tests we have conducted at the CHU hospital in Rennes were encouraging. We

now have to find new forms of finance to improve the monitoring tools and then to extend, i.e., democratise the process, the system and their medical uses. Given the population graphs and the pressure that is already exerted on hospital accommopossibilities. we need to create tools that make life easier for the families, friends aids - of these seniors." This project also fits in with then aims of the regional programme VESTA, that received a distinction from the banking Foundation of the Caisse d'Epargne in collaboration with the Picardie Region's University Jules-Verne and

the medical rehabilitation centre ay Corbie to assess the physical capacity for patients afflicted with multiple sclerosis. To continue in this vein. Frédéric Marin has registered a project "Ageing in the City", accepted by the research laboratory ComplexCity which conjugates the efforts of the UT Group (France's Universities of Technology) and the University of Shanghai; the thematic is framed as 'Ascertaining how to integrate gerontological tools specific to cases of Parkinson's disease when designing urban spaces?

Prevention and personalisation

More generally speaking, the fact that we can record movements enables us to engage in prevention policies and personalise the monitoring process, which are two emerging notions. "Each of us moves in different ways, as a function of our genetic makeup, previous traumatic history, life hygiene, etc. Recording movement allows the treatment to be adapted to the patient's capacities". Thus, with the Institute Faire face. Frédéric Marin is working on the quantification of facial movement to study the dynamics of a face after muscles have been regrafted, to better programme and adapt the rehabilitation of the patient. In the area of prevention, what we must understand is that above 35 years of age, our muscle-skeleton system is being degraded. "Ageing management is a new field of studies before us: 150 years back, average life expectancy was 40 years compared with 80 today! Without falling into the trap of

hypochondria, we can use movement sensors to follow the ageing process and the compensation that we use to accompany the changes. such as the way we stand when we have a sore back or weak knees, and to organise prevention procedures - such as changing one's sports activity for another without hurting or damaging oneself, viz., avoiding having to seek remedial cures". There are some technological hurdles to be crossed before these inertial sensors commonplace become in medicinal practice, starting with the question of their energy consumption. They are now relatively cheap, the price tag dropping from 2 000€ to 10€ a unit in a lapse of 10 years, hence their existence now in a number of devices such as Smart-phones, WII, sports devices, etc.), but they must be recharged every 8 hours. Frédéric Marin's team is working on this subject with Professor Abdelmadjid Bouabdallah from the UTC-Heudiasyc laboratory, in the framework of the Labex MS2T.

The hand, muscleskeleton disorders and virtual reality (VR)

The UTC-BMBI team who are specialised in the hand's bio-mechanical properties, have just completed another European project called COGNOITIO. The objective of the project is to propose tools to record and analyse hand movements in industrial environments, with the aim to assess the degree of difficulty for the operators and the risks to either muscles or the skeleton, "We should bear in mind", adds Frédéric Marin that "the hands are the first victim of muscle-skeleton ders, coming before the back and the knees" ». Inertial sensors for the hand could also lead to other futuristic applications, such as the ANR's (national research assessment agency) project Mandarin involving the CEA (atomic energy), Inria (automation and computer sciences) and the companies Renault and Haption. UTC's expertise will be applied to producing a return effort-reproducing glove. This is a project carrying a budget in excess of 700 000 €, beginning in June 2012 for a period of 42 months. "The research work features are now mature", underscores Frédéric Marin, extending his gratitude

to his collaborators past and present, viz., Pierre Devos, Laëtitia Fradet, Sofiane Fouaz Clint Hansen, Khalil Ben Mansour, Lydie Edward, Raoult, Tifenn Tony Dinis. Taysir Rezgui and Nicolas Vignais. "In 2014, part of our knowhow and in particular the platform CinDyAH, a real showroom for movement sensing, recording and analysis will be located in the UTC Innovation Centre to obtain an optimised valorisation of previous research work in the field".

#29 August 2014

START-UP

Communicating by touch

We are saturated by visual and audio information all day every day, but how could we transmit information via our sense of touch, not used very much today? This is the question addressed by the UTC-Costech Lab via an innovative prize winning project at the Innovation Centre in 2010. After 3 years maturing, the two UTC graduates in charge of the project design Thibaud Severini and Vanessa Caignault created their company Novitact.

The aim is to lend meaning to touch, notably through functions offered by the first product, the Feeltact vibratory comm-bracelet. This bracelet is a connected object that transmits and receives tactile messages in the form of vibrations. "The lexicon of our sense of touch is adapted to the users. The messages can be easily interpreted as a function of duration. intensity, rhythm and number of oscillators set in motion", says Thibaud Severeni, Chairman of Novitact. The bracelet is also connected to smartphones via a Bluetooth® connection.

There are very numerous possible applica-

tions for Feeltact. These could lie with professionals but also with private individuals even if Novitact - in the first instance - has targeted the profession safety sector, for environments where visual and oral communication prove difficult, or even dangerous. "For example", explains Vanessa Caignault, CEO of Novitact, "a ticket inspector on a train who feels he/ she is in danger can discretely send a message via the bracelet to warn his/her colleagues and receive a message in return about their arrival possibilities".

This idea for a vibration based data transmission system emerged in 2010 through a proposal by Nicolas Esposito, a research scientist working with the UTC-Costech Laboratory. It was Nicolas who first contacted Thibaud Severino - a graduate in Computer sciences and engineering from UTC. Thibaud ioined the adventure in June 2010, managing what was to become an innovating project. and he co-invented the the bracelet format. Then it was the turn of Vanessa Caignault to join the team (likewise a graduate from UTC specialised in innovating projects management). "After 10 years helping others to launch products and start-ups, I decided to 'cross the line' and get into entrepreneurship on my own". This prize win-

ning project benefited from funding by the Picardie Regional authorities, via the Maturation Fund and likewise from Europe via the FEDER (Regional development fund). The company was officially created in October 2013 and won the Digital Spring prize awarded June 5 this year, convened at the UTC Innovation Centre, thereby earning their tickets to seats on the French delegation who will be present at the next Consumer Electronics Show (CES), Las Vegas and this will surely add a lot of international visibility to the young company.

"But the main objective this year', says Thibaud Severini, "is to test the bracelets in real-life situations using some prototypes that we assembled as of April this year. The prototypes allowed them to contact ral companies interested potentially in the product and to identify those who expressed a wish to join forces in a test phase to be conducted by end 2014.

seve-



SPECIAL ISSUE INNOVATION CENTRE

#5 February **2008**

SEMINAR

The European vision of innovation centres

Innovation occurs when pluridisciplinary ideas come together and fructify. But what is the best way to accompany the process? UTC organized a European Seminar in December 2007 sought to answer this question.

The first difficulty lies in the demonstrable fact that institutional partners, research scientists and industrialists need not necessarily share the same vision of what innovation means. There are those who limit the view-point to creativity and a capacity to imagine new products/ processes, or to be able to invent new concepts: for others, innovation is iust a tool used to build a trademark image, to be better recognized and to base one's leadership in a given area. For yet others, innovation enables the development of new ideas up to the point that the products/processes be placed in the marketplace. As Claude-Emmanuel Boisson (with Ginger) summarises the situation - "An innovation only means something if there is a real market and people out there ready to buy the product/process. Innovation needs real clients! You need storytellers for whom the context of use of the product is a real story and who can sell the innovative products.

The second stumbling block is that there is a barrier of incomprehension even among these actors. How are you supposed to develop innovation? How are we supposed to bring research scientists closer to the industrial world and its needs, making them think in terms of concrete solutions to industrial production problems? In reverse, how are we supposed to make the industrialists aware of the academic issues in training and research in relation to improving

A workshop seminar for European Innovation Centres

This European seminar provided the opportunity to present similar experiments conducted elsewhere in Europe. The Technische Hocheschule Delft (THD), Netherlands, the University of Linköping in Sweden, the University of Bath in the UK with its Intelligent Design Observatory or the Renault and Ginger innovation units already have innovation Centres at their disposal to follow through on applied research, industrial valorisation or in teaching/ training matters.

a give innovative process and the management of ideas and concepts?

The solution advocated

is to bring the scientists, the industrialists, the lecturers, the students and project initiators together



in the same structural entity, viz., an innovation centre. An innovation centre does not have service offers, nor is an advisory unit, does not house a research lab and even less an enterprise nursery - the Innovation Centre is a similar to a platform integrating and accompanying an innovative process for the pursuit of managing collaborative projects. "An Innovation centre is a tool that supports research, training industrial valorisation and technology transfer functions, designed to facilitate the exchange of ideas making decision taking more robust and supporthe collaborative ting work" savs Bruno Bachimont, head of the Saturn project that allowed proper validation of concepts and preparation of UTC's new Innovation Centre. Currently, a number of industrialists, from multinational groups to SMEs are collaborating to improve communication their tools, develop and finalise tools and methods to make and manage prototypes, to design complex technological systems in areas as distinct as sustainable development for the oil extraction and processing industries, or in more common uses such as hydraulic diggers, irrigation pipe rollers, or AV sound, etc., mixing tables ...

Even before it was formally created, the 'future' UTC Innovation Centre is already in a position to select projects

The clear ambition for our major project for an Innovation Centre is to have a tool which - akin to a Villa Medicis for innovation" will welcome and host project managers who wish to collaborate with our laboratories at UTC and benefit from local skills. Our future Innovation Centre will be a focal point for efficient exchanges and a real shopwindow for UTC's potential and our achievements. The Innovation Centre will be solicited by various groups: scientists who have a project they want to develop; industrialists facing a need or an environmental challenge and which implies accepting changes. The Innovation Centre will be a lively arena for exchanges and expressing our creativity, enabling innovative projects to emerge through necessary cross-fertilization of skills that go beyond those of our initial theoretical core"

Ronan Stephan (President and Vice-Chancellor of UTC)

that are likely to make people and highly diverse teams collaborate. "The location is conducive to creative reflections. It is a space for freedom and ease of movement, that can be reshaped as and when needed", adds Thierry Gidel, in charge of the specialty Innovative Project management at UTC.

YOU HAVE THE FLOOR





Albert Fert's views on innovation

Albert Fert, who was co-awarded the Nobel Prize for Physics in 2007 for his discovery of giant magnetoresistance and his contribution to the development of spintronics, gives Interactions an insight to his views on Innovation and the relationship between Research and Industry

What paved the way to the discovery of giant magnetoresistance?

Progress in science often occurs at the boundary interface between several fields. The knowledge you gain in a neighbouring specialty sometimes help you overcome hurdles to innovation. The discovery we made in 1988, viz., giant magnetoresistance (GMR*) stemmed from an idea I had about the influence of the spin factor on electron mobility and the ongoing progress, at that time, about epitaxial processes using molecular iets, which was a wellmastered technology at the Thomson-CSF Laboratories. The natural outcome was collaboration between my laboratory and the laboratories at Thomson-CSF.

Are we to understand that the secret here lies in ties that are built between research laboratories and industry?

For public laboratory research scientists. has now becoming rewarding, in "The terms of carole, status reer. and and career paths notoriety, of PhDs should be value enhanced when add to their scientific they join industrial discoveries. employers." Innovation. we know, often comes from basic research findings but there the necessary proviso for their development lies in transmission between

what I would call, to simplify, upstream and downstream activities. This presupposes a certain degree of familiarity between the research community, on one hand, and the industrial R&D engineers and corporate structures on the other. The Thomson-CSF Laboratories, later chan-

ging to Thales, are used to housing large numbers of PhDs and my own personal relationships with former PhD students I supervised at Orsay University (Paris Sud XI) proved essential to developing collaboration with these laboratories. Finally it led to the

creation of a so-called mixed, or joint, research unit in physics between CNRS and Thales, in 1995. Nonetheless, it still remains true, unfortunately, that there are too few PhDs in general working in industrial sectors. The role, status and career paths of PhDs should be enhanced when they join industrial employers.

In 2009, UTC set up an Innovation Centre. As you see it, could this improve the relationships you mentioned earlier?

Well, I suppose such an innovation centre will lead to even stronger links between industrial partners. UTC's Laboratories and other public sector laboratories. Indeed, such centres could also help build personal relationships which often are long to establish. In my personal experience, in getting to know other research scientists or industrialists better has always been conducive to better scientific collaboration. But I am also aware that in other industrial sectors, the gap between research scientists and industry is wider and the transmission I mentioned is a much longer process. However, an innovation centre will throw light on notions such as the products and/or the marketplace which necessarily, but not obviously, support any innovation process. These notions, I would contend, represent one aspect of innovation that the research scientists on their own cannot manage or control properly. As scientists, we can identify the possibilities offered by certain scientific progress when it comes to creating new devices or processes. The follow-on is a necessary concertation with the industrialists, in order to ascertain whether the innovation has a commercial future and applications.

*GMR : Giant Magnetoresistance

www.thalesgroup.com



DID YOU KNOW THIS?

The discovery of Giant magnetoresistance (GMR) had a tremendous impact on ITC devices, notably on the manufacturing technologies used to assemble magnetic reading reads that equip all modern hard disk drive (HDD) memories.

YOU HAVE THE FLOOR





The case of C21, Paraná, Brazil

zing

The International Innovation Centre (C2I) in heart of the Techno-Park of the city of Curitiba, capital of the Brazilian state of Paraná, part of the FIEP* system is a strategic project for the development of regional industries in this Brazilian State. It is a unique structure, somewhat similar to the UTC Innovation Centre and indeed there are some collaborative links already between the two. Interactions spoke with Mr Filipe M. Cassapo, leader of the knowledge

What are the missions assigned to C2I, your international innovation centre?

In short, C2I catalyses the relationships and exchanges among the various players in the regional innovation ecosystem, so that enterprises of every shape and size and all the activities represented in the State of Paraná can develop in a sustainable manner and that likewise the Brazilian population also benefits from the ongoing developments. For this purpose, C2I modulates its interventions as a function of the level of maturity of the companies with which collaboration is established. notably in terms of innovation management. The companies may not yet be aware of the importance to innovate their products or processes and only see innovation in a random or sporadic fashion. Others have defined processes or innovative projects and are engaged in mobiliJust like UTC's Innovation Centre, C2I Paraná works with the prospect of reinforcing a training-researchinnovation triangle.

both manpower sources and finansupport as seen coherent to meet the assigned objectives. And for a third group, innovation and technology directly support the corporate strategic growth policy plans. Depending on the level of maturity of the company, our Innovation Centre will offer a full range of services supportive of more efficient innovation management, with goals running from simple awareness up to and including consulting missions, but not forgetting training and aids to structure the projects present in the Centre.

As you see it, what are the similarities and differences of C2I with respect to UTC's Innovation Centre?

Just like UTC's Innovation Centre, C2I Paraná works with the prospect of reinforcing a training-research-innovation triangle. But in contradiction, in Paraná, our Centre is not part of a University structure. nor is it attached to a research establishment. We do not undertake or develop research work at C2I: its role is to facilitate technology transfer of research results obtained in the various Paraná State universities to beneregionally located companies. This form of transferred skills is necessary to ensure that the companies can benefit from the valorisation of the research. The conceptual and methodological coherency of the two

differing approaches of our respective innovation Centres should, moreover, facilitate technology transfer operations (product/processes) between the Picardie Region in France and the State of Paraná in Brazil.

Could our two structures be complementary in the future?

As I see it, innovation for both structures share the same definition for innovation and can prove complementary in many areas. We can, for example, envisage exchanging on our operational practice protocols and also set up multicultural innovative proiects. And of course there is a possibility of setting up joint training course in management thematics for innovative projects or sharing certain research objectives (France and notably UTC - Brazil in in this instance, all the universities in the State of Paraná). Several concrete partnerships potential and joint projects have already been identified when you made two visits to Brazil and we came to visit the France. Let's take, as a case in point, two companies located in the Rives de l'Oise Technopark where we saw that there is indeed a potential for specific applications in Brazil.

* Federation of Industries in the State of Paraná (Brazil)

www.fiepr.org.br

DID YOU KNOW THIS?

With more than 30 000 corporate members, the Federation of Industries of the State of Paraná (FIEP), Brazil, is at the service of an industry based on sustainable development principles.

PARTNERSHIPS

UTC/ ÉTS (Montreal): international co-operation in innovation and creativity

UTC / ÉTS Montreal: engaged in joint international co-operation in the area of innovation and creativity Parc technologique des Rives de l'Oise, the Director of Montreal's l'École de Technologie Supérieure (ÉTS), Yves Beauchamp was invited to present the new Innovation « Quartier » (precinct) opened in the city of Montreal which had drawn its inspiration from the UTC's Innovation Centre. The interesting talk he gave came just before the official signing of an Agreement to Co-Operate between UTC and ÉTS in the area of innovation studies and practice.



In Montreal's Innovation Quartier, social and cultural events top the bill.

Montreal's recently imagined Quartier de l'Innovation, developed round ÉTS engineering school, aims at generating an urban ecosystem that will draw on the talents and enthusiasm of a dynamic population which should lead to creation of innovative companies and development of new academic cursus and research on a

world level standard, in a proactive stance with the University. The Quartier has assigned itself a mission that is not limited industrial, scientific and technological impact, but also implies innovation in social and cultural spheres. "An open innovation process is like a contact/combat sport, which you cannot play only between 09h00 and 17h00" recalls Yves Beauchamp. The aim is therefore to create a Ouartier which will not only follow the office hours of the companies who set up shop there, but also that of the populations who will live and work in the same Ouartier." The objective is to generate a high quality life style that will be diverse and attractive to seeing more residents choosing to live there, with shopping facilities, cultural activities and modern public services.

Two innovation ecosystems interacting soon

UTC bases development of its innovation and creativity ecosystem on acquiring a recognised international register. "Our ambition is to reinforce academic collaboration (teaching and research) with our international university level partners, and to develop new partnerships with French companies who wish to open to interna-

tional opportunities, or to multiply co-operative ventures with foreign companies who are installed (or planning to do so) in the Compiègne area." Adds UTC's President. Prof. Alain Storck. ÉTS Montreal and UTC signed an Agreement to Co-operate, to set up a forum for exchanges in view of installing a joint laboratory on the thematic of the sustainable city. In this partnership, both institutions encourage the exchange of students and academic staff. setting up joint projects (chairs, conference venues ...), management of collaborative projects development and research and innovation projects in general.



UTC /ÉTS Montreal: a long-standing intercultural collaboration

This idea of collaboration between UTC and ÉTS is not new. Ever since 1994. ÉTS and UTC have exchanged regularly and openly, notably with collaboration agreements for their undergraduates and academic staff. However the plan we have in mind goes beyond standard staff and student exchange processes, inasmuch as it implies shared governance. A noteworthy sign here is

the fact that each institution receives the President of the other institution each year at a Board meeting. In the Spring of 2010, another agreement was signed between ÉTS and the French UT network (UTC, UTBM Belfort-Montbeliard and UTT Troyes) relating to the mobility of undergraduate and graduate students and ÉTS' participation in development UTseuS of Master's Degree programmes. For the past two years, engineering students at ÉTS can follow a semester's courses in Shanghai followed by a local internship, while graduates from UTseuS also have the opportunity to pursue post-graduate studies at ÉTS after their study period with the French UT Network.



www.quartierinnovationmontreal.com. www.etsmtl.ca #18 Aug./Sept. **2012**

YOU HAVE THE FLOOR





How the French Government sees innovation.

Arnaud Montebourg, Minister in charge of Productive Rehabilitation [Redressement productif] in the J-M. Ayrault Government, gives his views on Innovation to Interactions.

You are one of the main actors behind the Government plans to orient industrial development. What position do you assign to innovation in terms of the competitivity of French enterprises?

Innovation is one of the motors we need to get out of the present crisis, in an industrial odyssey currently implemented by the Ministry for Productive Rehabilitation. Innovation must be seen at the heart of the strategy followed by every company in France since they must innovate if they want to grow and export. Our future growth in

France will depend on our capacity to encourage the emergence of break-through, scientific and technological progress, or in marketing and organisational management. Breakthroughs and progress must be accompanied by people meeting people and on diffusion and that we must circulation of not follow world ideas. Innotrends blindly vation presupposes that a need in confronted a novel way of doping things. Developing and funding applied research does not spontaneously lead to creation of commercial success stories:

on on the contrary, we must could create ecosystems that are conducive to the creatific tive process, and these must be framed in long-term projects. France is facing a long-term challenge that will benefit future generations.

In the USA, for example, 20% convinced

of the economy is due to 'actors' who did not even exist 40 years ago.

UTC is a major stakeplayer in two poles of competitivity and is a recognised laureate in several "Invest for the Future" facilities (IEED, Labex, Robotex, IRT...), in particular in the areas of plant chemistry, robotics, or system systems ... How do you see these tools and are they, in your view, appropriate levers to induce innovations?

The State programme "Invest for the Future" provides strong incentives for innovation. . The poles of competitivity also allow the actors to strongly accelerate the implementation of innovative actions and growth of enterprises. Our Government intends to reinforce these initiatives, so that they go beyond the level of "R&D project factories" and become "future project factories". Beyond these tools, the State must also rediscover its strategic role and contribute to design of products for tomorrow, to the discovery of market slots in which the country could very well become an economic world leader.

UTC has created an innovation centre that aims at implementing a local ecosystem where students, industrialists. lecturers. research scientists, associations... can all meet and exchange. What would you, as a Government Minister, expect from a University of Technologies such as ours, to help stimulate and develop innovative projects even further?

First of all, I would offer that you should pursue development of your eco-system, in order to maintain your dynamics and your vitality. I am convinced that we must not follow world trends blindly, but we should prefer to identify those technologies and market slots that can benefit France, those that we can use to develop French activities. If we do this, we have a chance to rehabilitate the country's economy.

www.redressement-productif.gouv.fr

DID YOU KNOW THIS?

Thirteen projects, under the heading « Mutualised Innovation» Platforms (PFMI), connected directly to the poles of competitivity, were recently selected in the framework of the Government "Invest for the Future" programme. #19 December **2012**

YOU HAVE THE FLOOR





Europe's innovation strategies

Bernard Cazeneuve, Delegate Minister for European Affairs at the French Foreign Office, was present at the ceremonial laying of the corner stone of UTC's coming Innovation Centre. He offers his vision as to Europe's R&D 'landscape.

By financing 4.7
Meuros out of a total
close to 13 Meuros, the
EU is one of the main
contributors for the
UTC Innovation Centre
project. What will be
the role of research and
innovation in the EU
strategy?

The EU must place innovation at the heart of its policies in favour of competitivity. The crisis did facing Europe reminds us how importance research and development for economic growth. The confrontation of world economic powers, in coming years, still remain subject to a high level investment in a knowledge-based economy. And this is where Europe can show its real strength. Our capacity to innovate to retain a competitive edge is one of the bases on which a competitive European industrial policy can be established, in order to keep productive activities - the source of employment - within the EU frontiers. At UTC, Europe contributed 40% of the investment needed for the Innovation Centre (via the FEDER - European regional development fund). In the framework of the "Europe 2020" strategy that was finalised in 2010, the obiective the EU west itself was to attain 3% GDP for a cumulate level of public and private investments for research and innovation, so as to support appropriately an intelligent, sustainable and inclusive growth pattern. The 'Europe 2020' strategy will benefit the economic actors, the employees but also the younger generations, their education and training requirements. In order to enable implementation of the reforms needed to attain these objectives, each Member State has subscribed a set of guidelines that ensure monitoring and follow-through for measures achieved in each domain. Moreover, it is very important that for its next budget, the EU will decide to set enough sufficient finance and means for research and development. The mistrust shown by citizens in reference to consequences of trade globalization and the economic crisis on jobs in France (and indeed in Europe in general), the fear that they will jeopardize our social protection systems are clear areas of concern to which "Europe 2020" will try to come up with solutions. some The main idea is to endow the European Union with an industrial policy that favours development of SMEs faced with very strong international competition, to support employment policies, to favour professional mobility and prioritize an overall growth target that also covers social cohesion and the fight against poverty.

How could an innovation centre such

as UTC's - inasmuch as it strengthens partnerships between universities. engineering schools, enterprises, territorial authorities - contribute to this desired overall **European effort?**

The EU must strengthen

links between education. research and development and innovation and provide support to the universities who is to endow the play central **European Union with** rolean industrial policy that in the favours development of offer of SMEs faced with very strong scieninternational competition. tifically qualified policies manpower for research and development. And France as a member state played its part in advocating the creation of a European Institute for Technology and Innovation (EIT) for the stated purpose of promoting a joint European approach, reinforcing the synergies between academic teaching, research and innovation

with a view to future commercial applications. UTC's Innovation Centre illustrates perfectly these objectives. It will be a platform for collaboration between cutting edge research in the Region, will conduct an assist collaborative projects that group together research, training and industrial valorisation and also technology transfer functions. In this manner The main idea the academics, the industrialists and the entrepreneurs will have to support employment a way to facilitate the immediate. concrete translation of 'sky basic knowledge various applicainto tions areas such as smart transport systems or biomedical technologies and

> The EC's Framework Programme (FP) called 'Horizon 2020' is a 7 year financial instrument, with 80

subsequent protocols.

billion euros earmarked for Research and Innovation. What will a European Research Area (ERA) look like in year 2020?

The European Union ever since the Lisbon Treaty was ratified, has its own prerogatives, enabling the Union (via the EC) to take initiatives deemed necessary to build the joint European Research Area (ERA). The financial commitments made this far must be pursued and further analysed, in order to facilitate the implementation of the FOP R&D programme and projects, to improve coordinated efforts on a European scale, to really instil a culture of European innovation. Europe needs a unified research area to attract talented scientists

and investments. For this reason, we place special importance on the budget allocated for research and development in the coming European budget. The European Commission (EC) is proposing to allocate a budget of some 80 billion euros over the 7 year FP (2014-2020), i.e., an increase of some 45% with respect to the previous FP budget. It is a programme that calls for scientific excellence, to the highest possible international standards. bringing with it improvements by simplifying access to EU funding, reinforcing the participation of enterprises, notably the SMEs and at the same time increasing the fraction of private financial sources in addition to the EU financial instruments (such as FP). The French

Government subscribes fully to the policy in principle of increasing the European budget devoted to research and development (...).

The rest of the interview (in French) can be downloaded at: http://interactions.utc.fr

ec.europa.eu/research/ horizon2020

DID YOU KNOW THIS?

The EC Framework
Programme (FP) for
Research and Innovation,
code-named Horizon
202 has three assigned
objectives: attaining
scientific excellence,
establishing industrial
pre-eminence and
meeting societal
challenges.

#20 February 2013

YOU HAVE THE FLOOR





A refreshing look at innovation

Christian Estève, has chaired UTC's Academic Board since 2005. He was Vice-President for the Renault-Nissan Alliance and was party to the start of the Government programme Investments for the Future (Ministry for Higher Education and Research). Before stepping down from the Academic Board in March 2013 and becoming Chair of the UTC Foundation campaign committee, Christian Estève gives Interactions his dual vision of how the engineering profession is changing and in innovation.

How do you see the engineering profession change?

The main change will encompass a more operational stance. Freshly graduated engineers must be operational as soon as they are recruited, since the companies they join will not have any spare time to pursue training. The graduates will also be part of an accelerating world, with its cortege of rapidly created equally rapidly and professions destroyed and whole business sec-

tors. The business environment is undergoing constant change. Today's engineers must adapt and question themselves constantly. At Renault, our management teams began asking questions whenever any part of the organisation corporate did not change. Globalisation forces us to adapt and neutralises any desire to hide behind a bush, so to speak. In the automobile sector, in Europe, we have run into a major period of disequilibrium, mainly due to basic production over-capacity. But this, in turn, opens up opportunities for new technical solutions and the launching of new models such as the Bluecar by Bolloré that will soon be market ready. In this context, priority must be given to orienting our engineers to engaging in more innovative areas. It is one of the strong features of UTC to open paths like this and placing research and innovation at the very heart of the teaching curricula.

Could innovation be the solution to today's economic doldrums?

Innovation is a prerequisite. But then you still have to turn promising ideas into economic winners. The concept of the entrepreneur is every bit as important as that of the qualified engineer. Our engineering schools (les grandes écoles) should not limit themselves to turning out management level engineers for the major industrial groups or for French Administration. They must also teach young people how to face risk intensive situations and help them assume and accept taking risks. The whole field of teaching entrepreneurship in France is wide open. Tomorrow's wealth will depend largely on today's next generation entrepreneurs. Indeed, we can see UTC's new Innovation Centre as a concrete translation of this guiding spirit at UTC insofar as it will accompany young creators of start-ups. The UTC local innovative eco-system, largely due to the initiative of Prof. Alain Storck, is totally in phase with the logic exposed here. We must do everything we can to encourage innovation and entrepreneurship.

How do you explain the typical French fears faced with entrepreneurship?

Well, one answer is

that the question of 'enterprises' nowhere central in school programmes in France. On top of this, there is a paralysing premonition faced with possible business failure. bankrupt Going is seen in France as a terrible, stymieing setback whereas in other countries going into receivership three times is often seen as the best guarantee that the fourth time round will be a profit-making bonanza! We must also change our attitude to science per se - there is a high degree of a priori distrust. If we fail to do this, France will become a 'living museum'. When I negotiated the

buy-out of Dacia by Renault and started the assembly lines that produce the Logan, I realised that intelligence was totally pervasive. everywhere. Rumanians can produce just as well as we can (or even better) because they adopt a more pragmatic vision than we do automobile assembly. In France. we tend Our engineering to preschools should teach fer well voung people how marked to face risk intensive tracks rasituations and help them ther than going assume and accept d o w n taking risks the albeit more risky roads opened by research and

Has the Government 'Investments for the Future' funding provided new impetus to innovation when creating value?

innovation.

After I left Renault, I simply thought it was important that in a world where access to knowledge was becoming "open shop", we needed to upgrade innovation

and value it as a national priority including it in an overarching process that will hopefully save our children from difficult times ahead. And that was why I got involved in the Government Investments for the Future programme. This Government funding programme represents a powerful leverage even through I regret when I see how it is slowed down by administrative hurdles that lower the competitivity of the projects designated as worthy of support. Some projects advance well; others get bogged down just because of these admin. brakes. We must be aware that the rest of the world is not going to slow down just for us!

What memories will you cherish after 8 years' office as Chair of the UTC Governing Board?

I personally took great pleasure in co-setting the heading for our University, along with all our research scientists. UTC now has an internationally recognised status and is a magnificent tool that the university corps of research scientists must defend and see flourish.

DID YOU KNOW THIS?

The Government programme Investments for the Future (IF) was launched end-2009 with an earmarked 35 billion euros, to bring France to the forefront of innovation in 5 domains: higher education and training, research, industrial sectors and SMEs and sustainable, digital development.

INTERNATIONAL

Towards a network of **Innovation Centres**

The Brazilian Confederation of Industries, over and above defending the interests of member industrialists, also been assigned the mission to offer training to member manpower resources. The Confederation comprises one Federation per Brazilian State, including therefore the State of Paraná with which UTC has established various forms of co-operation for 30 years now.

Paraná is highly industrialized. Its manufacturing/assembly sector – 46 000

companies employing 820 000 staff - contributes some 1/3 of the Paraná's GDP. "Our mission", says Filipe Cassapo,

chief executive for the Innovation Centre of the Federation of Industries at Curitiba, "is to accompany local industries in their efforts to develop, focusing on better productivity and sustainable development". If innovation is to irrigate the industrial sphere, it must comply with 3 prerequisites: training, consultancy (the culture of innovation, fund-raising, new economic models, technology transfer (TT), and applied research policies.

An Innovation Centre to enhance technology transfer

"In September 2014, we shall be inaugurating an electro-chemical laboratory that will specialize



in energy storage issues, waste product treatment, industrial optimization. etc. This lab, will be working in a network format with 23 research establishments connected to the other State Federations throughout Brazil", Felipe Cassapo. adds The Innovation Centre, created in fact 5 years ago in Curitiba near the city's universities, has as its assigned objective to facilitate technology transfers between the academic worlds and industrial applications. "Our industrial companies need to have access to "good practice" in innovation management, concepts which are fairly new to them. The Innovation Centre is the 'bridge' between research and industry. Our network of partners (including UTC) is essential for us to improve our international

visibility and ranking", stresses Felipe Cassapo, who, we note, graduated in Computer Science from UTC.

Priority placed on prevention of work accidents

UTC has been working for 30 years with the Federation of Industries of Paraná. Marilia de Souza. who set up contracts with the national Confederation of Industries while she was doing her PhD at UTC in 1996, recalls: "Co-operation projects with UTC fell into one of three main categories: prevention of work accidents with Pierre-Henri Dejean, value analysis through training/action plans, as well as a pedagogical role with training in French for the FIEPR management and simultaneous training solutions. with Bruno Ramond for both the Brazilian and the French students involved." Looking to the future, Marilia de Souza estimates that questions related to prevention of work accidents will remain primordial in Brazilian companies, given the more stringent standards and regulation that now apply, "This is an area of exploration we must get into together, because there is a gap when we consider European standards", she says. Traditionally we are talking about housing and building sectors, agro-food sector mechanical engineering. manufacturing and assembly work, etc.

Sustainable development points the way to new opportunities

Brazil is lacking in quality engineers. There are consequently many opportunities here for French engineers in general and UTC graduates in particular because of our historic partnerships, recognized in the State

of Paraná. All sectors in Brazil's economy are making demands, especially in the building trades, mechanical engineering, automobiles, bio-medical engineering, etc. New opportunities and demands are arising through application of the concept of sustainable development, notably in energy procurement and saving, biotechnologies, ICT and in the building and public works sectors: environment related challenges are a priority for the FIEPR". Among the perspective openings that would help formalize and strengthen the relationships with UTC, Marilia de Souza underscores the creation of a twinned Franco-Brazilian training establishment. which has been on the drawing board for some time now.

Strengthening the links among the Innovation Centres

Of note is the "Europe" module in the FIEPR MBA entitled "International, strategic Management", co-organized by UTC and the Catho-

lic University of Paraná. In this framework, some entrepreneurs managers visited the UTC Innovation Centre in 2012 for 10 days and a second group will be arriving end 2014. This Brazilian MBA ranks 88 in the top 100 world-class MBAs: "The Innovation Centres in the State of Paraná and UTC present a real potential for co-operation agreements that really should be valorized, adds Marilia de Souza. Our Innovation Centre is currently investigating 5 research projects in the area of nanotechnologies, related to material resistance. Our electro-chemical laboratory is also participating here, to answer some of the questions and need arising in the petroleum and gas extraction sectors, especially for very deep water drilling, but also for valorization of agro-resources", adds Felipe Cassapo. For UTC research scientists and for the French industries, Brazil is opening the doors for new challenges that lie ahead of a rapidly developing country". Faced with the growing presence of Asian and American business prospectors and actors in Brazil, Felipe Cassapo feels the some very practical proiects need to be launched jointly by UT and FIEPR, to serve the industrial and commercial partners of both institutions, blending and balancing long term research and short term projects with rapid industrial results to show.





#17 May 2012

THE LOCAL INNOVATION ECO-SYSTEM

The UTC ecosystem or innovation networking

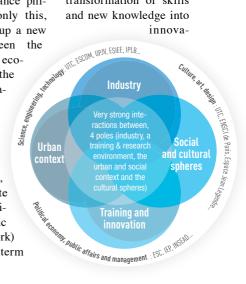
Technology today has to comply with far more stringent demands than ever before. The increasing complexity and the globalisation of systems is such that the innovation process itself requires diverse skills to be efficient and cost-effective. UTC still remains coherent with its initial values and natural forms of co-operation, and will become the driving force of a local innovation & creativity ecosystem where the various actors will soon be able to collaborate in networks.

Seeking an optimum interaction of the actors serving the innovation cause

Recently, UTC began implementing an ambitious development programme, the main feature of which is the creation of a local innovation, and creativity ecosystem designed to federate and coordinate all the local actors and tools to ensure a common, supportive proach to innovation in all its forms and aspects, whether they be technological, market-oriented, user-designed pedagogical purposes. "This ecosystem are building" says Prof. Alain Storck, interim President Viceand

Chancellor of the university, "will enable us to set in motion and optimise a network of regional, national and international actors, both users and service providers operating through a shared project governance philosophy. Not only this, but by setting up a new alliance between the academics, the economists and the research establishments, we shall access a new dynamic way to incubate ideas and projects, and to conciliate short term hori-(specific zons to project work) with longer term

thinking and analysis, i.e., to be present on the battle-field of ideas and scientific and technological controversies." The planned local ecosystem will be a forum and a locus conducive to the transformation of skills and new knowledge into innova-





tive inventions serving Mankind and Society at large. It will rely on very strong interactions between 4 poles (industry, a training & research environment, the urban and social context and the cultural spheres) within which each actor will have a specific role to play in the overall innovative process.

A lever for collaboration and development with the entrepreneurial world

This local innovation ecosystem, initiated by UTC, will provide powerful leverage ongoing and proposed forms of cooperation and development with socio-economic the milieus, using the tools UTC already avails of currently. "The UTC Innovation Foundation, an offshoot of the UTeam added value unit. the Technology Transfer

Accelerator company LUTECH, the seed fund Ouadrivium and UTC's Innovation Centre - the latter being the key stone for the ecosystem as a whole - comprise the initial list of partners the purpose of which is to facilitate relationships between academics and enterprise researchers, in particular those working with or in the SMEs". adds Christian Estève. Chairman of the UTC Board. "The new set-up will also enhance collaboration in entrepreneurship and innovation projects." USEC, the inundergraduates' house "junior enterprise", the UTC Students' Office (UTC-BDE) or the equivalent alumni, are all also partners to the ecosystem. "UTC's students represent a network of 18 000 active members spread round the world and prove to be the University's best ambassadors and the most efficient liaison officers for UTC's policy for development strategy," adds President Storck.

An ecosystem "rooted" in a local territory

The dynamics of co-operation among the various research and innovation partners also calls for an ambitious partnership with the city of Compiègne and its surroundings, in essence, the Picardie Region. Thus, Michel Foubert. Vice-President of Compiègne Pôle Technologique, the fact that "the term 'local' is used in the denominator "local innovation ecosystem" obviously does not do full justice to the project, inasmuch as the general objective is to achieve recognition nationally and internationally. The area we could call "greater Compiègne" offers UTC tools to support the project, with land, property and premises that will prove attractive to innovating, techno-

logy-intensive companies". The Science and Technology Park called "Parc Technologique des Rives de l'Oise" has welcomed and accompanied over the past 4 years a set of start up companies generated from R&D activities and this alone constitutes a terrific "attractor" for Compiègne. The magazine L'Entreprise ranked Compiègne top of the charts 'Innovation friendly' of cities with between 70 000 and 100 000 inhabitants.

A collective, coordinated group in phase with Picardie's regional policy

UTC, the city of Compiègne and the Picardie region who already have a strong track record in terms of innovation, notably in the framework of the government plan "Invest for the Future", were 'collectively' singled out as a model illustrating the excellent relationships than can exist between local authorities and an academic institution, during a debate organised by the monthly review L'Etudiant, with

the theme "Higher Education and Local Authorities: new ways to work together". However, what is the best way to articulate and coordinate the numerous actors in a local innovation ecosystem? "According to one regional policy" ensures René Anger, Director of the Privy Cabinet of the President of the Picardie Region "the Regions can be used as natural entities for experimenting various research and innovation policies. They notably serve to coordinate public/private financing policies, notably when the funding comes partly from the State. We can observe the recent success we have registered in the "Invest for the Future" plan. A new phase will now consist of developing locally more innovative activities, bringing these closer to the entrepreneurial world while keeping our ambitions for the UTC laboratories at the highest level, with the recognised excellence of the research at the core of the ecosystem, enhancing innovation and generating growth for the entire Picardie region.

All actors concerned are committed to this orientation and a label « Picardie technopole » will offer a higher degree of visibility, notably in the international sphere, whatever the thematics: tourism, entrepreneurship, research ...

www.educpros.fr/conference/collectivites/programme.html SPECIAL ISSUE INNOVATION CENTRE

#20 February 2013

INTERVIEW

"My vision is to build a worldwide University of technology"

What lies ahead in 2013 for UTC? President Professor Alain Storck gives his answers. When Prof. Alain Storck was confirmed as President of UTC in 2012, he introduced a tremendous, novel idea, to set up a local eco-system for innovation and creativity. It will become reality at the end of 2013 and Alain Storck comments "In order to make UTC a European-scale university institution, building on opportunities to innovate and create, we had to establish such an eco-system in our Region of Picardie, Inasmuch as the ecosystem is rooted in the regional context, it accompanies the international thrust of UTC, thanks to partnerships signed between the University, the Regional Authorities and industrial entrepreneurial partners", stresses Prof. Storck. The key feature, the UTV Innovation Centre will be delivered and commissioned end-2013; its purpose is to optimise the main links between the system's actors, and to promote and enhance innovation wherever possible: with technological upgrades, in marketing protocols and practice, in organisation and management and in pedagogy, etc. This local eco-system will also be placed under shared governance, UTC and the Picardie Region, the city of Compiègne and its suburbs and local enterprises. "I did not want UTC to be the only driving force of this local network, which improves the attractiveness of the area to favour the installation of new research h centres, branches for foreign universities, foreign companies and leading proponents of our specialities", adds the President of UTC.

Does this herald in a new vision for UTC's training cursus?

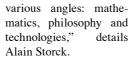
"Well, without going as far breaking with tradition and the initial ambition to see engineers and engineering at the heart of innovation processes, we see the new local ecosystem and the new cursus Humanities and Technology, not forgetting our joint teaching venture with China, UTseuS, as an answer via an evolu-

tion in our pedagogy and courses to better meet the demands of a changing world", explains Alain Storck. UTseuS which is a training and research branch of UTC within the University of

Shanghai will soon be followed by a second similar unit in Chile. located in the French Lycée at Viňa del Mar. There is an overarching vision for these ongoing developments: to 'build a worldwide University of technology" based on complementary branch nodes all digitally interconnected. "The point is that new ICT communication technologies are integral components of the new vision, but the teacher-student contact will not disappear" adds Prof. Storck. The new UTC Humanities and Technology course is a real challenge, consisting of matriculating student from the L (literary) and (economics) baccalaureate streams. Its inception corresponds to a wish expressed both by the students and by enterprise at large; the aim is to enable recruitment of engineers who will gain from both the technical and the general culture training modules. "The ambition of UTC is to reconcile science, technologies, humanities and social sciences, and thereby produce graduate engineers capable of thinking

in technical terms and also on the social and environmental conse-

quences of the technologies implemented. For example, notions such as "the zero and infinity" are taught from



"Engineers for the 21st Century must be more humanist"

These ongoing changes correspond to a new kind of engineer, who will be faced with the societal expectations arising through economic. social and environmental crises. "Engineers for the 21st century must be more humanist, more creative, more innovative and more open to the world around them" feels Alain Storck, who also is a believer in mixed formats, such as "engineerdoctor" with the visible development of "e-medicine". Thanks to its Department of Bio-Engineering, UTC will be in

a position to answer this need. "It is also within the remit of UTC, besides producing new knowledge and know-how.

transmitting them and transforming into them innovative products, processes ... to train entrepreneurs. UTC graduates, we can note, have set up some 110 new companies over the past 10 years. To go beyond this level, we now have planned for what we call an 'entrepreneurship pole', based in our Innovation Centre", he recalls.

A priority concern: increasing and diversifying financial sources

The fear that Prof. Storck entertains is that the French State may not be in a position to honour its commitments, financially speaking, to support the ambitious development project at UTC and to allow the "future infrastructure schemes" to become reality. "First and foremost among my concerns at the moment is how to increase and diversify UTC's funding. There are several ways to achieve this: firstly, through development of the UTC Foundation. where the next funding raising campaign aims at securing 10 Meuros over 5 years; the second is to reinforce links with the economic/industrial tissue in terms of partnership research agreements and the "apprenticeship" tax, viz., local professional activities that accrues to teaching establishments in France; thirdly, to proceed with a possible rise in student matriculation fees for non-French nationals in our student population and at the same time setting up a grant system, etc., for those in need", adds Prof. Storck. Moreover, the various alliances signed by UTC are gaining in impetus: the network of French universities of Technology (UTC, UTBM and UTT) to produce an enhanced level of attractiveness: our alliance with the University Jules Verne - Picardie which is compliant with territorial logic, embodied in a Regional conference of higher education a research establishments and our complementary choice of thematics in the framework of the PRES Sorbonne (Government supported Pole for research and higher education). 2013 indeed holds some highly promising prospects!

THINK TANK

Compiègne's local innovation and creativity eco-system is

'cleared for launch'

The eco-system is one of the major ambitions UTC: to be at the heart of a system that enhances innovation and creativity in the Compiègne city and environment. The inaugural meeting of the Advisory Board was held May 29, 2013; the role of the Board is to advise, to guide and otherwise encourage this flag-ship project.



his Board counts some twenty members, all strong 'believers' in the new partnership, getting readied for launch – starting with Ronan Stephan, former President and Vice-Chancellor of UTC and today Director of Innovation, with Alstom group. He offered a

brilliant demonstration of how necessary it is to have the mediation of "those that know" when it comes to rethinking any innovation policy. "Faced with stiff international competition, intellectual property law rights are not enough to protecting companies today. We must now move rapidly and build strategic partnerships with the academic world, not forgetting to consult 'civvy street' to test various uses of any given, proposed solution before it is deployed and developed. In essence, an eco-system can provide relevant answers to these challenges, and it can create the conditions propitious for comprehending and answering the demands of the future - and this, believe me, is

no easy task!"

'Open innovation' versus intellectual property rights

Ronan Stephan knows what he is talking about: at Alstom, there is a Group Innovation Committee and a specific, in-house, social network used to build "bridges" between scientists, the R&D division and customers. "We shall also be using mediation of academic actors to create discussion, research and experimental forums. The risk if we don't proceed in this manner is that we might miss out on some breakthrough discoveries: hence it is essential to build and maintain long term relationships with research laboratories, with the experts in both science and technologies". Ronan Stephan spoke of several cases in point that had rapidly become vital for Alstom, among which big data mining and management. "A contract was signed with UTC in connection with operating systems, to work with data bases and data packet transmission that was becoming both denser and denser and more and more stratified. Today, what we have to admit is that it is the speed with which a company can get its products to the market-place that counts in terms of competitivity, far more indeed than any intellectual property rights. In China, for example, our network solutions have been largely copied and there was nothing we could do about it. The local ecosystem for innovation should seek to strike a balance among the logic followed by the various actors in the field, in a context of mutual trust and co-operation around joint projects. Mediation between enterprise and Society at large necessarily transits via the scientists and engineers 'who know'. This function is primordial."

Long term, flexibility and pragmatism

UTC is perfectly happy to fulfil this function: in France, UTC is the first French University launch such an ambitious territorial project. It will not be a new formal entity, but rather a mechanism that brings the UTC is just

together economic, one cog in the academic wheel, the overall and public actors. "A viable lies in the degree of ecosystem must be able to rely on local strong points. In the Netherlands. the equivalent project is carried by the Philips Corporation, in Switzerland by EPFL (the École Polytechnique Fédérale de Lausanne) who has organised it on the engineering school campus. In the case of UTC", notes President Alain Storck, "the most important point was to build up a regional ecosystem and to share governance

with the partner enterprises and local authorities. UTC is just one cog in the wheel, the overall richness of which lies in the degree of collaboration and the enthusiasm of all concerned". This diagnosis of the situation is shared by René Anger, Executive Director at the Picardie Regional Council. "Ever since the 1980s, the Picardie Region has been setting its priority R&D poli-

cies and the-

matics as a

function of

industrial crises and richness of which urgencies; There collaboration and the an almost enthusiasm of all natural concerned convergence between the Contract 4-year between the Government and the Picardie region and UTC's objectives, notably in regard to new forms of mobility and plant chemistry which we support and encourage via the company called Capital-risqué Picardie Investissement (Picardie venture capital investment). The Picardie Region has always played an incentive role - the question is, can we (and how precisely) push matters even further? Certain ancillary tools, certain operational schemes are now outdated and need to be revitalised we want to induce a new spirit into regional innovation. Let me add that we shall not succeed here if we do not first achieve a convergence of interests and aims between the Region's public authorities, its academics and industrialists. The ecosystem we are discussing must be part of a long term strategy, both flexible and pragmatic as we implement it. It definitely must not be reserved for "the happy few" - which leads us to a vital question: how will the eco-system cover and irrigate the Region?"

"Culture seen as an integrating factor"

How indeed can we best organise the eco-network to bring, for example, the techno-park called Rives de l'Oise closer to, or in contact with. Méaulte

and predominant aeronautical activities? How are we to mobilise scientists and artists round joint projects? As Véronique Misséri We sees it, there shall need to are 4 major prove the added axes to be privileged. value and return on Véronique investment (ROI) is a UTC to the region research scientist and lecturer. who has accepted the mission to pilot this project to success. The first axis concerns the UTC Innovation Centre. Student-engineers, enterprise representatives. research scientists will be able to meet and exchange in this 5 000 m² building currently under construction: it has been designed to encourage and enhance innovation intensive initiatives and intellectual brainstorming on all floors, so to speak. Cultural activities will also have a key role to play, in order to make the Centre open up to the public at large. " Culture is an integrating factor", underlines President Storck. UTC is already building bridges between arts and technology, a good example being the Composite(s) Festival which brings together visual artists. manual workers and digital proponents. One of the first projects of the UTC Innovation Centre relates to a sector where art and high technology go hand in hand: luxury brand flacons. There are UTC teams working on innovations projects for the benefit of the 65 SMEs of Glass Valley (a world class pole for luxury brand bottling in the Bresles valley (they are studying anti-counterfeit marking, thermal properties of the flacons, etc.). Innovation and gains in competitivity of these small companies should help ensure that their know-how and expertise in glass stays in France. The local ecosystem for innovation will contribute to making other initiatives more visible. A good example is the event: SME Ambitions (SME-student-engineer encounters), or the 24h Innovation Challenge, in which activities UTC would like to associate the regional enterprises desirous to do so.



Ronan Stephan (Director Innovation Alstom Group), Prof. Alain Storck (Pres. & VP UTC), Prof. em. Allen Scott (UCLA, USA), René Anger (Executive Director, Picardie Regional Council)

The coming digital community

"The 2nd priority thematic will be to develop an innovating, digitally meshed community, with inter-connecting social networks" explains Véronique Misséri. "Some 80 are already connected to the network we have been operating now for 4 months: the 3rd and 4th axes will be to issue invitations to innovate and create develop regional scale network meshing, building bridges cross-overs and locations that are conducive to innovation-intensive activities". About 50 enterprises are now partners to the ecosystem. Some structuring regional entities have also been approached for contributions, among which the

Region's industrial poles of competitivity and i-Trans. "These poles will gradually induce positive effects throughout the Region. The existence of i-Trans and the partnerships we have signed with the major Picardie sites in the field of transtechnologies portation and engineering have helped enhance - I am personally convinced the retaining of sites and reinforcement of their activities and in our Region", underlines René Anger. This provides an encouraging outlook for the ecosystem per se, the objective of which is to create wealth, added value and innovations in many shapes and forms. President Storck reminds his colleagues that "it is not enough to build premises; we must also give meaning to our endeayour". This indeed is the challenge of 6 priority actions defined thus specific research programmes, offer to accompany partners and provide services for startups and regionally based enterprises, which constitute meaningful targets for the UTC Innovation Centre, creation of a 'living lab' and a defining of a regional marketing strategy.

A European ambition

"If we can succeed in enhancing the attractiveness of our Region, then the ecosystem will naturally serve to bring in new enterprises, engineering school outposts and research establishments to set up shop here" stresses President Storck, "Even if the ecosystem is anchored in Picardie, its ambition must be international in scope. This is one of the corner stones of our overall strategy - to see the University of Technology of Compiègne (UTC become a European University of Technology (EUT)". The new ambition would embody 6 thematics: plant chemobility/transmistry, portation, the environment and sustainable city concept, health, design and entrepreneurship." Professor Thomas Froehlicher. Dean and Director General of HEC Liege, Belgium also is convinced that UTC will assume its full influence and meaning in a European context; he is also a member of the steering committee for Creative Wallonia. a framework programme that places creativity at the heart of a Wallonia development strategy. Wallonia indeed was elected 'European Creative District' in

January 2013 for The its fine and **Picardie** noteworthy Region has always support of a creative economy. "There precisely) push would. I feel, be a strong geographic and strategic coherency were we to envision building a large area running from Picardie to Wallonia with innovation as the centrepiece of future develop-

ment schemes", he suggests. To move forward on the European front. 'rendez-vous', as we say, at the Innovation Summit 2013 which will take place in Liege, Belgium, mid-November 2013.

Indicators, the 'one-stop' shop and mediation

The first meeting of the Advisory Board did not choose to ignore the difficulties that lie ahead. The ecosystem - carried as it is by actors with differing logics and timescales - must attempts to conciliate their various expectations. "This is

the very reason for

having an advi-

sory board!" explains Alain played an incentive Storck. role – the question Two memis, can we (and how bers of the Board. matters even Gilles Zuberhuler (CEO further? of Clariant and President of UIC Picardie Champagne-Ardenne) and Hugues Arnaud-Mayer (chairman of the Innovation Standing Committee at the MEDEF (the French employers' union)), reasserted their commitment to the project. "The Picardie Region is ranked 4th in France in the chemical sector, with 100 enterprises and more than 12 000 salaried employees. Clariant is a partner to both IAR and PIVERT actions. In the framework of the ecosystem", proposes Gilles Zuberhuler, "it is important to consider vertical integration, whereby chemists can be involved in research activities in varying sites and we can provide space for this in our industrial platforms to accommodate innovating start-ups. What we need here is an open dialogue in relation to intellectual property rights where the academic milieu can play the role of mediator."As Hugues Arnaud-Mayer sees the future, the UTC ecosystem, at some stage, will need quantity indicators. "We shall need to prove the added value and return on investment (ROI) to the region. This is the only way we can attract innovation financiers. and integrate ecosystem work upstream. When all is said and done, could prove attractive to new local investors". Guillaume Lucas (Vice-President for the Monitoring Committee for i-Trans and Executive Director General with Faively) sees the ecosystem as a source of opportunities for innovation and creativity and for better co-ordination with local entrepreneurs who

wish to start innovative projects and approach the academics interested. "What we have to set up is a one-stop shop approach to replace and coordinate offers that sometimes are in completion and rarely understood. The role of the ecosystem is not yet fully clear on this score, but I shall personally see

to it that the ecosystem is not just a new addition bolted on to existing structures". With these provisos and nuances on the table, Ronan Stephan concludes, adding the final touch "We have all the trump cards in our hands: we really must succeed!"

THE LOCAL INNOVATION ECO-SYSTEM

The local innovation eco-system

as seen by UTC's partners

As we enter the digital age, representing a constant challenge in space and time, UTC is also investing in development of the surrounding areas, through a vision called the local innovation and creativity eco-system. This eco-system seeks to create stronger links among the local actors, whatever their sector of activity- research, enterprise, culture, politics, etc. — to encourage and enhance research work, innovation and improve competitivity. Below we present a description of the eco-system by those engaged in building it, in a dual prospective view, local and European.

n the expression innovaeco-svstem" each term has its importance", **Michel Foubert, Deputy** Mayor, Compiègne and also member of the eco-system's steering committee. "Eco-system makes us think of plants that cannot grow separately from the others, like the UTC laboratories, the poles of competitivity IAR or i-Trans, the enterprises, the culture agents, the social workers, etc. Our aim is to build bridges between actors, not in a simple juxtaposition just as livings organisms do, to seek crossfertilisation that leads to innovative ideas, to competitive positions and, in fine, to job-creation and local development." So speaks a man who defended a PhD thesis in molecular biology. This This summarises is bas the raison d'être of Com-

This vision
is based on a
tradition for dialogue
and innovation that
was already strong
in the Picardie
Region

A tradition for dialogue and innovation

piègne's

eco-system.

This vision is based on a tradition for dialogue and innovation that was already strong in the Picardie Region. Thus, the expenditure for inhabitant/inhabitant exceeds
that of all other Region
in France, notes Michel
Foubert, adding "In 2012,
Compiègne took the top
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in the Region
in 2012,
Compiègne took the top
step of the natioinnovation!
UTC, ESCOM, the
Institut Polytechnique
L a s a l l e
Beauvais form

the core locus in this land of innovative actions, to which all local enterprises contribute." The regional policy for research and innovation has a long history going back to the Government's National Consultations or "assises" in 1981-1982. The main strategic op-

tions were decided at that time with UTC and UPJV (Jules Verne, Amiens) contributing, thereby building up an Coordination ensemble of tools such as the technical centres (the CVG -valorisation of glucoses and natural products), the CO-DEM. sustainable construction and eco-materials, the Agro-Transfer centre. resources and territory. etc.). These decisions also saw a confirmation in the creation of two poles of competitivity, IAR and i-Trans", recalls René Anger, executive Director to the President of the Picardie Regional Council and member of the Advisory Board of the Eco-System. The same opinion is aired at the Regional Delegation for Research and Technology (DRRT - ministerial regional offices)."The principal power of the Picardie Region lies is the already strong interactions between local actors" notes Marc-André Fliniaux. "Thus, when

the government launched the Investments for the Future incentive programme, the regional

Prefect, the Presi-

dent of the Region brought will be needed. together all to ensure better the avaivisibility and to lable 'fireensure the link power' of with innovation. Picardie to accompany financial aids and the priority international projects, many ambitions. of which when on to gain their Picardie certification. obtained one of the best national scores. Attaining constructive dialogue between the State and the Region is not easy everywhere and is something that is highly appreciated by the corpo-

A local response to national and **European ambitions**

versities."

rate sectors and the uni-

"The eco-system as such has existed for a long time, but under a different name", notes René Anger, for whom this unbroken policy enabled the Region to augment competence/skills, with ambitious projects such as PIVERT (Picardie Innovations Végétales, Enseignements et Recherches Technologiques), certified as an Institut d'Excellence for carbon-free energies. and Improve that won the tender for "Common Innovation Platforms". At national and European levels, the eco-system is part of the global integration of innovation-intensive approaches, such as the Ministry for HE and Research's road-map "France Europe 2020": the strategic agenda for research. technology transfer innovaand tion". In September, the Picardie Region will be issuing its scheme for "Smart specialisation strategy" aka 'S3', a vital ingredient of the new European policy for cohesion 2014-2020. "This policy has the objective to devote the entire Structural Fund to the Europe 2020 strategic target for "intelligent, sustainable and comprehensive growth". The eco-system set in motion by UTC is absolutely in phase with these ambitions: indeed we shall want to look closer at what European funding can offer if we

are eligible", concludes Marc-André Fliniaux.

The dynamics of the

eco-system are in favour

Returning to the 'glorious' years of job creation

of the Region, chosen recently by Plastic Omnium and Bostik to locate their R&D centres. "With the eco-system presenting a high degree of attractiveness for our city and surrounding area and their 75 000 inhabitants, was certainly taken into account and the sociofor these economic worlds decisions", notes Michel Foubert proudly. He expects this in turn will induce more job creations. "When Continental Tyres and some Army units left, 1 100 jobs were lost. Faced with this situation, we decided we just could not complain, nor sit with our arms crossed. We had to take initiatives to create other job openings, new

activities: in 3 years, 1 100 jobs were recreated. The ecosystem pursue and double up its efforts in both industrial and service sectors. Our hope is that we can return to the 'glorious' years in France, when 300 jobs were created each year between 1990 and 2007. whilst maintaining our life style and standards of living. The role of the Compiègne agglomeration and the Region consists UTC's of accompa-Innovation nying Centre, to be dynamics, financing commissioned end the tools 2013, will be one of as needed. the main tools used such as to create better links UTC's between the academic Innovation Centre".

New means and better visibility

UTC's Innovation Centre, to be commissioned end 2013, will be one of the main tools used to create better links between the academic and the socio-economic worlds. "Given its medium size, the City of Compiègne has avoided "the innovative precinct approach", seen in larger city structures. Such innovating precincts lead occasionally to an imbalance with the rest of the city, whereas here all Compiègne benefits from the UTC initiated eco-system", observes Michel Foubert. For example, the Techno-Park called Rives de l'Oise, managed by area authorities (ARC), with have physical walk-ways to connecting directing to the UTC's Innovation Centre with shared technical equipment and facilities. Already the Director for Development of ARC, Sylvie Ciocci, and her colleague Serge Cochard. Director of Economic Development. have offered their skills to the eco-system; in like manner, the research scientists of UTC, Véronique Misséri, in charge of development of the eco-system and Bruno Ramond, Director of the Innovation Centre. The challenge is to accompany industrial changing. "Our objective is to improve the planning of land planning thanks to strong local anchor sites: the UTC Inno-



vation Centre. Amiens that will be created ar Saint-Quentin bringing INSSET and IUT closer. the future IAR at Laon. etc. Coordination will be needed, to ensure better visibility and to ensure the link with innovation. financial aids and international ambitions. That is why we have created a regional platform at Amiens, to articulate three aspects inter collecting viscous aspects (BBI France, Picardie investment. Ubifrance. etc.) to better orient enterprises.", details René Anger.

Inter-mediation and 'resource managers'

According to René Anger, the proper functioning of the eco-system and more generally speaking Picardie Technopole, demands that special attention be paid to inter-mediation, without which dialogue between enterprises and research laboratories is simply not possible. "Translation of expectations, identification of needs are specific to the technical centres. to the innovation centres, to the technical platforms in the lycée. We do not in fact need any new structure inasmuch these skills already exist in the area, but we must train people who will assure the contact with the enterprises to guide them to the appropriate resources (IndustriLAB. innovation centres, laboratories, etc.). The Region can identify such people in the framework of the Picardie Technopole. The aim is to value add to the complementariness possible and to build chains of value, on the basis of the skills to develops comparative advantages". UTC also plays this role inter-mediation: in France, UTC is the first university establishment to support such an ambitious territorial project as the local ecosystem for innovation and creativity. President Storck reminded his colleagues of this at the first meeting of the Advisory Board that took place in May. "In the context of UTC, the most relevant thing is to build up a regional eco-system and to share governance with local enterprises local authorities. UTC is a driving force for this eco-system, the richness of which depends on collaboration and commitment by all the partners".

Business and enterprise placed front-stage

APEC - whose job it is, as a national agency, to accompany executive level job-seekers and bpifrance are among the resources that enterprises use. The eco-system will lead to synergy among the various regional

actors "the strength of which lies in the diversity of sectors of activity and major companies located in the The area: chemieco-system plant. cal represents it is the logistics, answer to some high cosmetics. expectations and could pharmaceuticals, even prove to be a agro-food, model for the etc. as well as future". numerous SMEs

who together contribute to Picardie's overall vitality. The German wind-turbine assembler Enercon and an international call-centre have installed themselves recently", recalls Michèle Sallembier. "Moreover, we often observe that executive managers, in mid-career, or following loss of their jobs, choose to seek new employment locally if only to diminish travel time, to improve their life-styles and be able to spend more time wit their families. Enterprises that innovate recruit new skills: the eco-system must be enabled to provide better information to these managers as to the real needs." Concerning bpifance, Christophe Langlet recalls that in 2012, some 1 820 Picardie Region companies received financial support from bpifrance financement (592 M€, 24 M€ of which went to innovating projects and 14 M€ from bpifrance investissement (11.6 M€), "We could have gone further in our support of innovative projects if there had been more of these" underlines Christophe Langlet, who is also a believer in the virtues of the eco-system: "When we see a project presented by one of the eco-system actors, we tend to work in full trust. The objective is to place the enterprise front-stage, in order to identify synergies than can be improved and create an efficient value chain. Working in network formation allows the enterprise to bring the relevant actors together at the right moment, to anticipate financial needs, etc."

Moving towards 'open' laboratories?

Care must be taken not to get dispersed, underscores Marc-André Fliniaux: "We must not complicate matters by following too many axes. Today, what is missing is an overall governance plan that focuses on research and innovation, and likewise a process to assess progress, with a set of defined objectives to be met. René Anger also warns that "Where the universities are concerned, we must be able to justify a highlevel scientific content. as is shown by the UTC-Heudiasyc Laboratory in terms of staff mobility. We must be ready and able to answer expectations (and our promises) from the industrialists, failing which we shall disappoint our partners and find ourselves out of step". So what about 10 vears down the road? For René Anger, an evolution that would be highly acceptable would be to create 'open laboratories'. to see innovation in situ and in essence alive on an experimental basis that would serve as a synthebetween research. enterprise and land planning. "In 2020 when the new TGV station will be opened at Creil - already one of the biggest rail nodal points in France, there will certainly be opportunities to study new forms of mobility". For sure the coming elections will not upset this forward looking frame of mind; "The eco-system represents a vision that transcends political cleavages", Michel Foubert, adding that "it fits perfectly with our concept of land planning; it is the answer to some high expectations and could even prove to be a model for the future".

PARTNERS

A cultural **ambition**

It was one of the first cultural spots in France to be devoted to arts and new technologies. The local innovation ecosystem emphasises the importance of the Espace Jean Legendre (former Mayor), a national scene in the Oise valley, associating arts and artists in various creative processes.



since 1998, the Espace ■has organised the **Festival of Composites.** with scene art, visual arts and digital techniques married with a high level of success "For 2 years the Festival has provided the opportunity to organise exchanges on creative technologies and new technologies (ICTs). Obviously, this has become possible because of the proximity of UTC and the relationships have grown stronger ever since 2009", says Éric Rouchaud, Director of both the Imperial Theatre and the Espace Jean Legendre. UTC has for example been working on the project of an Internet site for French "melodies", using the Imperial Theatre as a sounding post. The eco-system has come at just the right moment when we want to amplify the contacts between artists, research scientists, students and enterprise. "The contacts must be constant to enrich the process of creation". A platform Art & Technology, currently being finalised, will be located in the Espace Jean Legendre and UTC's Innovation Centre. "The objective here is dual: to open up a field of possibilities for the artists, and to enhance their work through use of new technologies; for the academics and the economic sector, it is an opportunity to join forces and enjoy a new angle from which to observe innovative processes." Éric Rouchaud has already identified some artists who could get involved, e.g., like the Company Adrien M / Claire B or that of Joris Mathieu, in music-related projects, in virtual reality, robotics, man-machine interface. "We could also show local produced added value innovation to local populations. Whether a cultural spot is associated with the ecosystem or not will reveal relevance of the projects in terms of attractiveness for the local area", he explains. As of 2014, the Espace Jean Legendre and the UTC Innovation Centre will be showing joint proiects in exhibition form and, in 2015, the Festival of Composites will present two Local Eco-system Innovation labelled projects"..

#23 August 2013

POINT OF VIEW

Position statement by the ecosystem

Advisory Board

Sylvain Allano, Director for science and future technologies at PSA (car manufacturers) and Member of the Local Ecosystem Advisory Board. "If we really want the ecosystem to work, then we must build up industrial relationships with both major groups and SMEs (which is the case of UTC's Heudiasyc lab, with its excellent regional roots and connexions with companies of every size and shape" portends Sylvain Allano.

n his opinion UTC has reached a level of maturity that is recognised both nationally and internationally in terms of its scientific research and training programmes. PSA collaborates with the Heudiasyc laboratory in a partnership that is located in Beijing.

How to rapidly discover technological nuggets

"Having a partner of this level of quality is essential to our aim: academics and start-ups close to the academic world can occasionally come across technological nuggets. We have to be positively opportunistic and integrate these breakthroughs as rapidly as possible. In a world of fierce, merciless competition, the key-word has to be speed", insists Sylvain Allano, who also places emphasis on the important role of the SMEs. "SMEs and major groups work better together in a neutral terrain, e.g., in an ecosystem, with legal safety measures accepted by all. The majors continue their work of integrating the technological bricks design along the value chain, through sub-contracting and technology providers.

When you can benefit from the reactive and creative SMEs, you can rest assured that you will stay at the cutting edge of technology."

Heudiasyc and delegated driving functions

PSA wishes to explore (with Heudiasyc) the domain of delegated driving functions (driverless cars) which calls for skills in mechatronics, in mechanical engineering, in algorithmics ... thanks to PSA, UTC will officially join the Institut du Véhicule Décarboné Communicant [carbon communicating free carsl et de sa Mobilité

(VeDeCoM), located at Paris-Saclay, with about 40 partner companies (Valeo, Renault, etc.), to try to boost our automobile sectors and design tomorrow's cars. "PSA moved into open innovation policies 3 years ago", explains Sylvain Allano. "Like many other industrial groups, we realized that we could no longer depend on internal innovation. and we had to look for other forms of creativity outside PSA, sometimes outside the automobile world, for example in aeronautics, sports, pharmaceuticals, agronomy, etc. ... who, in certain instances, have a large advance in terms of new materials and innovating systems". With 1200 patent registrations claims /year, PSA is one of the most innovative companies in France. Depending on the situations and

the various university campuses, the manufacturers PSA is creating "open labs", strategic partnerships and academic chairs, in an ensemble called StelLab.

Confidence, performance and consistency

Sylvain Allano plans to build a strategic partnership with UTC, providing some means and agreeing on a scientific programme. The local ecosystem brings added value to the University: "This is a structured approach, with an Advisory Board and an Innovation Centre We must add consistency and regularity to the relationships, in the performance markers which are necessary to measure the ROI (return on investment), likewise confidence - and this implies mobilising manpower elements so that the dynamics of the system increase", he advises. But what, we may ask, does PSA bring to the ecosystem? "Sometimes, just the fact of exchanging on our technological needs can trigger some research, even an economic activity. The world of car manufacturing is a concentrate of some 100 professional specialities, in which the questions of sustainable development and connectivity offer a growing number of opportunities. Heudiasyc, in this sense, will be our ambassador. We also want to be able to help create start-ups: if at the end of his/her thesis. a young PhD wants to set up a company with a PSA engineer, that would be a total success for all!" he concludes

#23 August 2013

ENTERPRISES

A place to **meet**

The question is: why did the international Bostik Group, adhesives subsidiary of Total, choose to get involved in the local innovation eco-system? "Our driving force is 'creativity'", says Jean-François Chartrel, Head of the Depart. of Applied Technology at their R&D centre at Ribécourt.

his is one of the **Bostik Group's 3** research establishments in the world (the other two are in Shanghai and Milwaukee. and is planned to move to Bois de Plaisance industrial zone "even nearer the university campus and the centre eco-system", of the notes Jean-François Chartrel, adding "there have always been exchanges and relationships built between Bostik and UTC, because we desire to increase yet again the number of patents we register and to gain competitivity. R&D establishment for example is a meeting place where academic research (theses and postdocs) come together with industrial research. We have, to illustrate, just set up a research collabora-

tion with ESCOM about some of our adhesive products – repair plasters and tile cements and pointing. Questions about mechanical properties, acoustics, chemistry and process engineering are of interest. Some colleagues already have

close relationships with h

(green chemistry)". For J-F Chartrel, the eco-system offers opportunity to build even larger networks, but with tighter links, round the Innovation Centre within the bounds set by the accepted rules of industrial property rights. "Fairly naturally, I would say, a company turns to the same suppliers, the same ideas. This networking allows you to go beyond this familiarity and create added value and competitivity thanks to having and using these meeting places. For example, I regularly meet colleagues from Clariant during the workshop sessions of the ecosystem, and this turns out to be the only chance

Sostik speak with them.

have to

The

Innovation

Centre will be a jumpboard towards creativity and the ecosystem by its sheer density will add to overall territorial attractiveness", says our man who takes part in the working party on ideation processes. These workshops, to be more precise, build up the ecosystem itself. As far as Bostik is concerned, the new R&D unit will be a "demonstrator house", in which and on which the Group's new products will be tested, for isolation, insulation, etc. It could be made available to the ecosystem teams, in a agreement the format of which still has to be decided. "We shall also

be in a position to supply novel adhesives or create one especially if a given project seems valid to us – we now see gluing used more and more in industrial assembly processes, and this is expanding especially in aeronautics", notes Jean-François Chantrel. Moreover, Bostik – recruiting more and more student trainees – will be hiring about 40 research scientists in the coming year for its new R&D establishment.

Creating **CONVIVIALITY**

Reviatech is a company specialised in interactive 3-D technologies and was created in 2008 by Romain Lelong and Medhi Sbaouni. As they see it, the local ecosystem enables and formalises a trend to encourage and enhance dialogues that already exists in the company.

eviatech can recreate an industrial line post to train operators without danger and without stopping production. on a course that covers all sorts of failures and alarm states. Reviatech also edits training software packages and is now orienting its policies to creating virtual reality (VR) environments for public events. So, who are their clients? Continental, the DCSN. Areva... Reviatech has a

turnover of 100 00 euros and advises UTC on its choice of equipment for the future VR room at the Innovation Centre. "The relationships that UTC is developing with industrialists are interesting for us, the start-ups; The Innovation Centre will act as the hub and the accelerator to help us exchange more spontaneously, more easily and thus create new opportunities. For example, we could access Renault's needs or reply to calls to tender by the ARC (Greater Compiègne) if we had better information sources, and indications as to needs", explains Romain Lelong. We had heard about a museum structure that would require 3D display of works, but it did not come about. Medhi Shaouni adds "In order for the ecosystem to become a convivial, user-friendly network, such that participants can find new axes for development, we should be organising



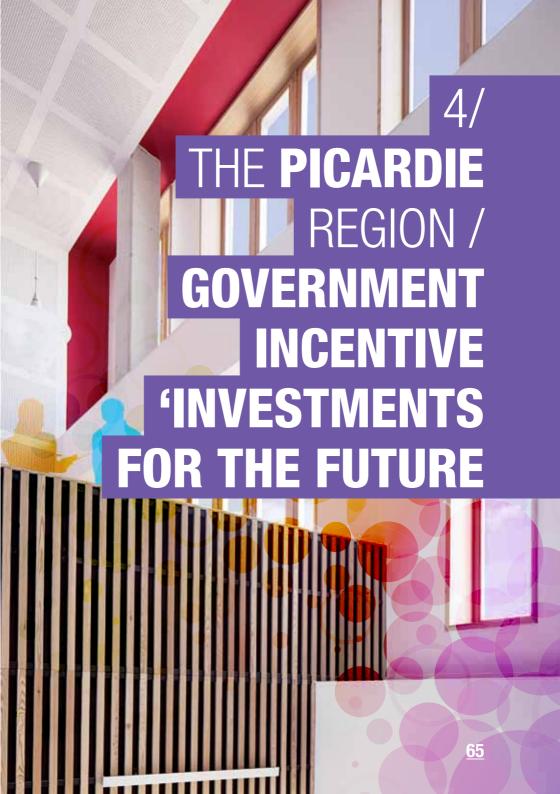
breakfasts, after-work get-togethers, demonstrations, meetings ... in this highly symbolic place for the ecosystem as a whole, viz., UTC's Innovation Centre'.

An emblematic collaborative research project

Reviatech is already involved in collaborative

research with students, notably in the Coyote Project which has enrolled 40 Mechanical engineering trainees to improve the interface in virtual reality training. It provides real added value for the company, inasmuch as the kind of people capable of doing this sort of testing are not exactly running around on the streets. Another project, for the

moment under the wraps but seen as "emblematic of future developments of the ecosystem", associates Reviatech. industrialist and UTC. "The local ecosystem enables other enterprises to build up special relationships with UTC if they have joint interests, and also Reviatech gets the chance to widen its knowledge about the universities laboratories and ongoing work". The two young CEOs advise that communication/PR made as widely as possible on real examples, so as to better identify needs, wishes, and to detect people/structures with viable promising projects, who embody ideas and know how to get to the aid structures. "Moving on from the exceptional to the normal" as they put it.



#21 April 2013

INNOVATION AND PARTNERSHIPS

UTC, a three stage rocket boosting entrepreneurship

"In order to boost innovation and creation of enterprises, the UTC rocket has been designed as a 3-stage vehicle", says Benoît Eynard, UTC Director for Innovation and Partnerships. Stand-by for lift-off!

that initiate the undergraduates to creation and management of innovative companies,

- these courses are given by Joseph Orlinski. "One prerequisite we have here, enabling registration in the courses, is to present a project!" Under the course code GE15, the students approach the corporate world in terms of company creation and development. Joseph himself graduated from UTC in 1986, became a company director. He therefore is in an excellent position to provide pragmatic lessons. He has been doing so since 1995, a time when the former

President François Peccoud decided to make valorisation of innovation through corporate creation one of the University's priorities. "The very first thing I ask my students to do is to dream! says Joseph. They must follow these dreams and passions; in a word "think big", before coming back to Earth and pragmatic." becoming This approach marks the minds of the students, and those who later set up a business often call back – even after a few years have elapsed – to ask for advice or help or to join the UTC Business Club.

"Creating a business enterprise is not just wishful thinking"

"UTC offers two assets, beginning with a training that encourages and enhances students' initiative and the the spirit of enterprise". There are course modules like Project Management (GE37) Management Marketing of Innovation (GE39) and the minor option FIRME (Training in Innovation and global enterprise relationships" or gain the speciality "Management of Innovative projects, which is in feat transverse to all UTC's technical Departments. "UTC also offers tailor-made assistance for those who have a project. Creating a business enterprise is not just wishful thinking and the young entrepreneurs must not get locked into accounting-financial objectives - they must light fires everywhere. We do a lot of exchange work with the project proponents, future bosses or bosses in position, to help break down the isolation and avoid their losing precious time." Joseph Orlinski himself has many projects to hand: setting up a training course module for 1st year undergraduates, organising open days to have students, entrepreneurs et ali get together and exchange. The first such event was organised with the IAR Invest Club, and will be convened June 6, 2013; it will serve to introduce actors from "green" technology sectors, including 5 business angels. The theme will be "Entreprise- taking reasonable risks - and the risk of being unreasonable". "The entrepreneurs present will not be invited

to hard-sell their products or business" adds Joseph Orlinski, "but on the contrary to mobilise the young students and explain why it is necessary to raise our heads in France, in a very low profile economic context".

Gaining a label, a first step towards creation

The second stage of the UTC rocket is the University's Innovation Centre. "For 3 years now", explains Benoît Evnard, "the Innovation Centre has been initiating competitions innovative projects and the Centre's Jury awards labels to the most promising received. Labelling a project opens the way for the proponents to mature, to take the new idea to the stage of creating a business operation and place its products on the market-place." It is the UTC's Directorate for Innovation and Partnerships that assists and oversees the technological, economic and marketing aspects of the project as it progresses. External actors are also brought in as and if they can provide

an added value to the project: market analysts, designers, biotechnology experts, etc. These addons are financed through a maturation fund with the UTC Foundation and represents an envelope close to 125 000 €/yr. The project competition is open to the undergraduates, to teaching and research staff and even to external actors, if they can bee seen to contribute to the local ecosystem we have set up in and around Compiègne, initiated by President Storck. Among those projects that have been awarded a label, some have already reached corporate creation level, an example being Closycom (July 2012) or Novitact. Others have registered patent claims, e.g. Tatin. When the building programme is finished, the premises of the UTC Innovation Centre will be a focus point for valorising innovation, with sectors reserved for create activities for prototyping, for meeting rooms, etc; "The Innovation Centre will vitalise a proximity network function dedicated specifically to entrepreneurship", says Benoît Eynard. There is only one shadow cast on the scene: the Picardie Incubator is undergoing rehabilitation at the moment, and this has left a temporary void in the normal UTC follow-up operations that run from project stage to the market-place. "A second competition has been launched in parallel, used to select student projects even before they reach possible UTC labelling – this enables projects in their very early stages to obtain some financial support and human assistance where needed over a onesemester period. Students here are brim-full of projects, stresses Vanessa Caignault, who works at the Directorate for Innovation and Partnerships. Some of the pre-labelled selections we help in this way will definitely, I feel, go forward to full label status."

Third and final stage of the UTC rocket – the SATT unit

The SATTs (acronym in French for Technology Transfer Companies plc) were created by the French Government to accompany those innovative projects that called for high-level support; consequently the SATTs dispose of considerable amounts of human and financial means, explains Benoît Eynard. "UTC has entered into an agreement with the University Paris VI (Pierre et Marie Curie), the CNRS. the national Museum of Natural History, with IN-SEAD-Fontainebleau and the University of Paris -Pantheon-Assas in what is known as the SATT Lutech. One of the projects awarded a label by the Innovation Centre, the IDCCM is currently being valorised by Lutech. This is an business start-up offspring of UTC's BMBI (bioengineering) Laboratory which has developed an innovative system for cell culture protocols that can be of interest to the pharmaceutical, cosmetic and/or chemical sectors at large." This IDCCM project needed 300 000 € to move on to the next stage and the Lutech SATT saw fit to help out and finance this", recalls Benoît Eynard. "Among our coming events, do not miss out on the "Forum Entreprise" specially aimed at SMEs and innovative companies, organised by the UTC Directorate for Innovation and Partnerships; this will be held May 2, 2013. "There is by the way another "Forum Entreprise" organised at and by UTC but we saw that the SMEs found it hard to have their say faced with the large multinational groups," adds Benoît. "What we have decided now is to hold a special SME Day, once a year, organised along the same lines".

LABEX MS2T

Mini-drones and systems of systems:

UTC leads the way

Imagine a mini-drone actually flying round the Le Bourget halls: this was the challenge accepted in 2013 by the research scientists at the UTC-Heudiasyc Laboratory on the Picardie Region's stand. In two years' time, hopefully, we shall be presenting our new mini-drone models in the framework of the Robotex excellence programme, promises Professor Ali Charara, Director of the UTC-Heudiasyc laboratory. These mini-drones also serve to illustrate work in progress so to speak in the laboratory "Control for Technological Systems of Systems", Labex MS2T, co-ordinated by UTC.

drone fly round inside a huilding is far more complicated than meets the eve, if only because of the numerous possible sources of interference with fliaht control. Guillaume Sanahuja, who is a research engineer with Heudiasyc and in the Équipex Robotex teams, has successfully programmed the drone to follow a white line and land at a predetermined spot on the floor.

aking a mini-

Keep the right heading!

Flight disturbances were modelled to check the

capability of the drone to keep to its heading in any prevailing weather condition. "What did was design a unique methodology, relying on tailor-made algorithms and a technique to analyse optical data flow, so that the drone always positions itself correctly with respect to the designated target", adds Prof. Charara. In the Robotex programme context we are now developing at UTC a small squadron, around a dozen drones? A flight circuit is being built in the UTC Innovation Centre". This is because UTC was chosen to pilot one of the 5 excellence equipment aspects of Robotex, mobile air and land robotics, coordinated by Prof. Philippe Bonnifait from the Heudiasvc Lab. The objective is to achieve synchronised flight with 4 minidrones, each with a single task in an overall mission assigned to the squadron. "It would prove interesting when monitoring a major site, or a railroad complex, or monitoring for fire risk and seeking out persons lost in a forest", adds Prof. Charara.

A generic methodology for systems of systems

Synchronised group movements illustrate what

we call systems of systems, such as inter-communicating vehicles on the road, a multimodal platform, a remote Medicare monitoring unit or a multi-source energy production system. So, how do we organise the interactions and optimise

quently, there is no genecould adapt to their specia unique, interdisciplinary approach, associa-Heudiasyc, BMBI, Ro-

ric methodology that they fic tasks. In order to build such 'generic solution, we have started working on tion the UTC labs, viz.

ber-

The

val and the

CNRS.

h o w the systems a whole operate? This is the question addressed bv Labex MS2T. "This concept of 'systems of systems' has its origins in military thinking, to co-ordinate various armed forces, but it has spread over into the industrial world now. in sectors such as transportation, environment energy. However, academic research in France has not thus far looked closely at the topic: each industrialist or each socio-economic actor applies his own methods to his own area of interests or products and, conse-

MS2T Labex is a sort of melting pot exchanging ideas among the scientists and the industrialists to face up to the scientific and technological challenges involved. We shall soon be extending the concept and approach to incorporate social sciences and thereby take human factors into account." details Ali Charara The scientific hurdles relate mainly to three subjects: management of uncertainty, system to system co-operation and resilience of the system of

systems concept. There are 10 theses under way. 2 of which are co-financed with the military establishment research DGA (Direction Générale de l'Armement) and the Picardie Regional Council; and 8 post-docs studying the same issues, one of which is supported financially by Alstom working on optimisation of a control & command system in a so-called "smart" network. The challenge here is to manage as well as possible the matching between production and energy consumption at a time when there are now decentralised sources of renewable energy and associate problems of energy efficiency. Applications could be forthcoming in e-medicine, smart cities. etc. The MS2T Labex unit also hosts foreign high-level research scientists who would come to Compiègne and also finances excellence grants to attract then best student candidates in the framework of the new master's degree launched in September 2013.

First international workshop: strategically positioning the MS2T Labex

The progress and the prospects before the MS2T Labex – with budget of 6.7 M€ over 9 years – were presented early September in an international workshop and at the meeting of the international scientific steering advisory committee (with its 7 experts from the USA, from Europe and from Australia), with

representatives of the management of UTC, of the CNRS, of the ANR, of the PRES (Pôle de recherche et d'enseignement supérieur Sorbonne Universités). More than 100 persons attended this first international workshop organised by Professor Marie-Christine Ho Ba Tho. Director of the UTC-BMBI Laboratory. «For this first workshop, the objective was to position strategically the MS2T Labex at European and internal level, notably on the context and framework of the EU's Horizon 2020 Programme. Wr had some excellent feed-back from the attendees." Each year, alternately, the MS2T Labex will organise a summer school and an international workshop. With one overarching ail: To become the benchmark laboratory in systems of technology intensive systems within the decade to come!"

www.utc.fr/labexms2t

#25 December **2013**

THE RESEARCH AND INNOVATION WEEK

Picardie Region: a strategy to acquire an intelligent specialisation

France's Picardie Region is putting the final touch to its "smart specialisation strategy", called SRI-S3, an exercise advocated by the European Union (EU) to efficiently mobilise the structural funds between 2014 and 2020. Nathalie Van Schoor, Deputy Director General of the Picardie Regional executive's division "Economic Development, Research and Innovation".

RI-S3 is the acronym in French for "Regional Innovation Strategy for Smart specialisation strategy". In order to draft this road-map document. the Picardie Region did not have to start from scratch. In 2008, the Region formally adopted a plan for its Research and Higher Education activities and policies, followed in 2010 by a Regional Strategy for Innovation. "We had already oriented our regional policies to favour research and innovation" recalls Nathalie Van Schoor, "The SRI-S3 called for some extra work, to specialise". In order to assist the Regions to draft their texts, the EU defined 4 principles: the 'territory' must be specialised in a context of omniscient global markets, competitive

assets must be identified, those that have critical mass in terms of added value, partnerships must be encouraged and promoted. The ambition here is to focus resources and efforts on those fields of activity that are seen as relevant in terms of competitivity.

3 objectives and 10 strategic axes

"In order to design the SRI-S3 plan, we first of all had to work with those in charge of the local research and innovation ecosystem, in order to identify the major projects in the Region and verify that they are in agreement with research fields to ensure that there an overall coherence. The third stage allowed us to identify promising

markets and partnerships in Picardie", explains Nathalie Von Schoor. This process resulted in establishing 3 main objectives and 10 strategic axes, as follows.

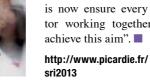
Picardie Technopole and UTC's Innovation Centre

The 3 objectives are: to develop instruments for governance and administration: to accentuate regional actions and focus more on local competitive assets; structure and implement a novel and innovative environment. "We must bring our forces together and orient them to specialisations - these will be reassessed during period 2014-2020 so that they are adapted to the evolution of the

operational programmes decided at EU level", adds Nathalie Von Schoor. Each of the 3 objectives is subdivided in strategic axes. The first objective corresponds to 3 axes, beginning with the structuring the Picardie Technopole. "Picardie Technopole is an ensemble of services and persons specifically assigned to the economic development of the Region. The regional territory is analysed and assessed, for diffusion of innovative actions, creating and enhancing synergies and partnerships to bring added value to the Region. UTC's Innovation Centre will be one of the focus points for the actors engaged in joint projects". The 2 other axes are organisation of governance and implementation of monitoring assessment systems for the SRI-S3 scheme as a whole.

Five promising markets in research and economic development

The second objective covers two axes - specialisations in fields that are already competitive and in promising sectors. The Picardie Region is placing its bets on 5 important sectors: industrial production and transformation of plant materials (agro-machinery, precision agriculture, agro-industries, plant chemistry, methanisation. human and animal food stuffs), Mobility and 'urbanicity' (design and production of vehicles and sub-assemblies for the automobile industry, materials and innovative assembly procedures, energy storage and associate services), smart vehicles, social innovation and, last but not least, reconstruction surgery and health related technologies. "The first two sectors have now attained their maturity, the other three are jewels that the Region is observing closely", notes Nathalie Van Schoor. The third major objective covers 5 strategic axes: integrating control of environmental and industrial toxic risks: developing further digital capabilities and systems of systems; reinforcing differentiation and innovation devices: enhancing and encouraging development of entrepreneurship and internationalisation: adapting financial tools to accompany innovation. There is an overarching vision to formalise this work: "Our aim, by 2020, is to see Picardie becoming a Region that is recognised for its capacity to innovate. Job creation and new enterprises, registration of patent claims, pilot projects, etc., all of which will serve as indicators for our performance. The challenge is now ensure every actor working together to achieve this aim".





#28 June 2014

ÉQUIPEX FIGURES

Remodeling taces

(Équipex) «FIGURES» (a French Government labelled excellence platform) stand for "Facing Faces Institute GUiding RESearch", co-managed by the Amiens teaching hospital and surgeon Prof. Bernard Devauchelle, is a platform specialised in facial reparatory surgery.

What is an **Équipex** ?

With a budget envelope of one billion euros, the first call to tender for "excellence equipment" is designed to enable French laboratories to acquire cutting edge scientific intermediate range research equipment (costing between 1 and 20 Meuros) to carry out world-class research, "for the purpose of furthering the advancement of knowledge and innovation". Out of 336 projects deposited at the French ministry of Higher Education & Research, only 52 were selected as viable. 340 Meuros were allocated to the laureates. UTC is involved in two projects selected - Robotex and Figures. These two projects are among the 12 that were allocated more than 10 Meuros each.

'Figures' Government lahel covers the period 2011-2019, and involves several partners: UTC. **CEA** (France's Atomic Energy Agency), UPJV (University Jules Verne Amiens) and two companies PLUGMED and MSC Scanning. Scientific monitoring on behalf of UTC is assured by Marie-Christine Prof Ho Ba Tho (Director of UTC-BMBI (Bio-mechanics and Bio-engineering Laboratory).

UTC-Roberval and UTC-Costech laboratories are also involved

The research programmes conducted by UTC relate to the consequences of disfigurement and graft maxilla-facial

surgery. This covers a wide area of research specialties: biomechanical modeling to simulate face movements, with a view to planning operations and function reeducation, development of grafts and implants, tissue engineering for bone reconstruction, perception, expression and self-teaching of the patient's face.

Three new pieces of equipment for UTC

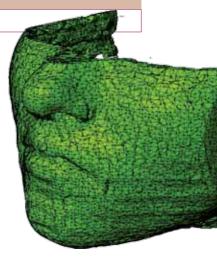
The overall financial packet amounted to 105 000 k€. UTC received 603 k€, plus 125k€ from the FEDER (EU regional development fund). This budget, associated with the research programme has enabled the acquisition of a movement detection,

a system specialized in facial sensing (installed at the UTC Innovation Centre), a bi-axial mechanical characterization system for bio-materials and a bioreactor for bone tissue engineering. The dvnamic calculation software and structural analyses for face modelling were financed and installed at the UTC Inter-Lab. Computation Platform and Multidisciplinary Modelling (Pilcam2).

First scientific results

The first scientific results relate to personalized 'tailor-made' modelling of the face muscles that are responsible for facula mimics (such as smiles) from medical imaging. In parallel, the protocols used to ana-

lyse facial mimics and measurements facial were readied. As were the experimental protocols used to carry out biaxial characterization of soft tissues (skin. muscles) as well as preliminary research into hybrid substitutes rebuilt as bio-reactors. These results were communicated at the first Open Day for the Institut Faire Face (cf. Interactions #24), but were both national and international publicity. They were obtained in the framework of structuring regional projects SI-MOVI (Face Movement Simulation) between the teaching hospital (CHU) at Amiens, UTC (the BMBI and Roberval Laboratories) and Ingestissos. Other projects are being readied: ERM VI-SAGE designed to ex-



plore
'elastographics' via magnetic resonance techniques and to analyse the facial mimics with EMG, FLOWFACE aims at modelling face fluids and SILKGUIDE is investigation the possibilities of innovative surgical nerve prosthetics and patient's

Laboratoires BMBI, Roberval et Costech:
http://webtv.utc.fr > Nos
séries > Les laboratoires de
recherche

recovery of movement

functions.

#29 August 2014

PICARDIE REGION

A remarkable harvest

The Picardie Region is among front-line runners of French Regions in the Government's "Investments for the Future" incentive programme (PIA). Regional Deputy Directors General, Nathalie Van Schoor (for economic development, research and innovation), sees this high score (14 projects accepted under the PIA) stemming from two regional policy initiatives: a long term positive policy in favour of research and additional support awards to every project approved under the PIA calls to tender.

Government PIA incentive was a blessing for two of our Region's research intensive establishments (UTC and UPJV). But the Regional authorities played their part too", recalls Nathalie Van Schoor, "As of 2000, our policy to support research enabled regional actors to set up better internal structures and create more efficient networks, as was need for them to develop". Further to this thrust. a supporting letter was signed by the Region's President, guaranteeing that project candidates would be 'accompanied' by the Region during the PIA calls to tender. By 'accompanied', we refer financial support,

manpower resources and aids to purchase new equipment, according to the project needs.

5 specialist areas, 14 projects and 307.54 Meuros

All told, 14 regionally proposed projects were approved (in 25 PIA calls to tender, out of a total of 400 approved nation-wide. This was a remarkable harvest, all the more spectacular given the Picardie Region's research potential. Indeed, the ministry for Higher Education and Research underscored this in its status report referring to the first two PIA rounds: "Certain Regions, such as Picardie, will benefit from considerable support in terms of means, compared with their rank in scientific production". The ministry identified 5 specialist areas for Picardie: biology-health, biotechnologies and bioresources. chemistry, mathematics and mobile robotics, 8 out of the 14 projects approved were purely regional (excluding any supra-regional networks). They called for 81 Meuros investments, on top of which came the Regional credits. As an example, we can cite the financial aid for the building erected to house 'Figures' (cf. Interactions #28). "Building work is planned to start early next vear". adds Nathalie Van Schoor. The PI-VERT Biogis Centre (cf. Interactions #28) also receives an additional financial support from the Region. "This centre will be the very first building with PIA support to be erected (corner stone laid): we see it as emblematic inasmuch as it structures a new regional specialty sector and the commencement of new relations between academics and industrialists. The PIA scheme therefore accelerates our efforts to do research and development certain thematic areas, such as bio-sourced chemistry, energy storage, enhanced mobility, etc. What we have is continuity and fulfilment of our regional policy".

Three locations for a new dynamic thrust

The next step will include the Energy storage hub, a building specially made for the needs of the STORE-EX Laboratory (UPJV) where research work will begin in Autumn 2014. With 'FIGURES' the Picardie Region will have three new locations "of scientific excellence with a new dynamic thrust to bring scientific academics and economic actors closer together. Thanks to the PIA Incentive, we shall be able to accelerate the meeting of laboratories and enterprises". underscores Nathalie Van Schoor who also cited UTC's Innovation Centre, SAS PIVERT has, to date, recruited 7 persons, and likewise SAS Improve (a shared institute for vegetable proteins based in

in the regional capital, Amiens)
yet another
ten personnel
a n d

which receives 3.7 Meuros from PIA. "This only the beginning and does not include indirect job position created. The sectors will need to restructure themselves and thus attract even more, actors to join in", says Nathalie Van Schoor.

Our strength lies in working together

And we have left aside the PIA second round for the moment, under preparation and which favours land planning projects. "We are working with UTC and UPJV to present highly structured application files in two specialist areas: plant chemistry (bio-economics and the bio-refinery) and 'smart' management of mobility and energy. Our strength lies that dates back for at least 20 years now. UTC and UPJV Laboratories fully appreciate each other's merits and skills, guaranteeing an integrated answer to the calls to tender. This constitutes a real added value and which will allow us to succeed in the long term".



#29 August 2014

ÉQUIPEX ROBOTEX

Inventing a future for **robots**

The Robotex platform was ranked 1st ex aequo among 52 projects selected in the first wave of government labelled "excellence" equipment units in year 2010. Robotex has

enabled a network with the 15 main robot research teams in France. Mobile robotics are dealt with by UTC and its Heudiasyc Laboratory. The equipment needed has arrived and the research work has commenced.

What is an Équipex ?

With a budget envelope of one billion euros, the first call to tender for "excellence equipment" is designed to enable French laboratories to acquire cutting edge scientific intermediate range research equipment (costing between 1 and 20 Meuros) to carry out world-class research, "for the purpose of furthering the advancement of knowledge and innovation". Out of 336 projects deposited at the French ministry of Higher Education & Research, only 52 were selected as viable. 340 Meuros were allocated to the laureates. UTC is involved in two projects selected - Robotex and Figures. These two projects are among the 12 that were allocated more than 10 Meuros each.

obiective having this equipment, for UTC, is to reinforce its Heudiasvc laboratory's potential, to enable the research teams to carry out smart vehicle experiments (land-based and airborne). "With Robotex. UTC focuses on mobile robotics, making good use of the expertise we have assembled over 15 years. Today, we are finishing the first phase of the equipment investments installation. We have received three vehicles that we are fitting with instruments and sensors, a laboratory on wheels a test track and a drone test flight area. We feel the same, I suppose,

as if we had been granted a particle accelerator!" says Philippe Bonnifait, research scientist at the UTC-Heudiasyc laboratory, who is responsible for the UTC Équipex sub-network and the "Mobile land and airborne mobile devices" in the Robotex programme. After modification, the three all-electric cars (two Zoe's and a Fluence from Renault) will be totally operable via computer. The "driverless" runs will be carried out on our test track, part of the UTC Innovation Centre, as will the drone flight area - the first out of five air-borne robots is already operational.

A structuring programme for UTC-Heudiasyc

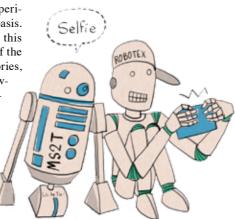
All told, the equipment represents a budget of 1.5 Meuros. 800 000€. of which came from the Robotex programme. "Thanks to our Government labelling under 'Équipex', we have been able to raise extra funds". underscores Philippe "Robotex Bonnifait. has proved to be a very structuring programme for UTC-Heudiasyc and has generated a dynamic in-house feeling for mobile robotics and allowed us to receive some remarkable equipment. It is a great opportunity for us and our research teams can experiment their ideas with a high degree of freedom and at scale one." The Heudiasvc teams are focusing on control functions and robotics, with applications in perception, localization, control and navigation of the vehicles, solo or in groups co-operation in with human operators. Robotex also procures better national and international visibility. consolidated links with automobile manufacturers, drone assemblers, etc. The UTC-Heudiasyc closed ranks with two of UTC's partners, Renault. PSA and also Parrot, who build civilian drone. "There are numerous applications and we are only at the beginning of driverless vehicles and air-borne robots that will no doubt ne common a few years' time" foresees Philippe Bonnifait, "Both French and German constructors are announcing driverless cars for year 2020!"

Catching up on France's lag in robotics

The second phase of the project relates to ensuring regular use of the equipment. The aim here is to raise funds to ensure planning of experiments on a regular basis. UTC is building for this purpose a network of the 15 Robotex laboratories. to exchange knowhow, return on experience, on technologies ... and to open Équipex facilities to new academic and industrial actors. "We would

also like to see Robotex registered with other European-scale projects. France come in 3rd place in terms of its scientific publications, but has no less than 1 000 research scientist and engineers in the field of robotics. But Franc has a lag in associated experimental research: Robotex could provide the opportunity to catch up on the gap and stay in the global robot race, inasmuch as you need cutting edge equipment to stay at the forefront of research".

Laboratoire Heudiasyc: http://webtv.utc.fr > Nos séries > Les laboratoires de recherche



#29 August 2014

SATT LUTECH

Serving

maturation of research

After the State authorities recognized that the results of public research laboratories are rarely valorized industrially or in innovations, because of the large gap between the two worlds, the SATTs were created (Technology Transfer acceleration units) the mission of which is to enable maturation of scientific work. "Companies must be able to cross the so called 'valley of death' that separates the laboratory from industrial development" summarizes Chantal Vernis, President of SATT Lutech of which UTC is a stakeholder.

ur universities are full of highly skilled persons but they rarely speak the same

language as the industrialists who rarely speak the same language as the industrialist. UTC however is an establishment where the gap is less wide than elsewhere. but we must create limited number of forums for our exchanges so that

the industrialists can "connect"; that indeed was why the SATTs were created", notes Chantal Vernis, by way of an introduction. The SATTs have their own capital assets (1 Meuros for

SATT Lutech) and this enables recruitment of staff with double profiles (academic and industrial)



in very specific sectors, with the capacity and talent to identify interesting research topics and to imagine "maturation" programmes to valorize such projects. The programmes must be desig-

ned so as to decrease the risk factors that inhibit industrialists in their capacity to innovate. "Maturation" is a process that aims at transforming scientific inventions into the socio-economic innovations stage, in other words, to have inventors and market-places come together. To achieve this aim, several unanswered question remain (technological and industrial feasibility, market position, economic viability, etc.) removing or assessing risks such that future industrial partners (entrepreneurs, existing companies) can join in for the follow up stages. "SATTs are private companies by law and serve interfaces between

public research and the socio-economic world. In keeping with the current philosophy to encourage decentralization, SATTs are located by geographic logic and not by specialty. They constitute the new link between the clusters and the university poles of competitivity", adds Chantal Vernis, Thus, the SATT Lutech enjoys a privileged relationship with Sorbonne Universités (cluster) and there is clear overlap of members of both entities.

SATT Lutech accelerates in 2014

SATT Lutech was created in early 2012 and has already invested 4.5 Meuros in 22 projects (figures as of end 2013) and has enabled creation of 2 start-ups. There are 17 new projects in maturation phases, 7 of which could leads to the creation of others start-ups. There are 69 projects undergoing initial design phases and assessment. "Currently we are analysing the "why' and the 'how' we can/should accompany the projects to full maturation", stresses Chantal Vernis SATT

Lutech has a financial potential amounting to 20.6 Meuros for the first 3 years and 73.1 Meuros are expected over a 10 year period. "If the objectives we set are reached at the end of the 3rd year, i.e., end 2014, then the following financial commitments will be taken", adds Chantal Vernis, "To date, we have financed with our own funds all the maturation programmes. The amount of the financial outlay relates directly to the specific needs expressed in each project. The amount granted can run from 30 000€ to 500 000€. On the agenda of then next SATT Lutech investment committee. we shall present the first co-maturation scheme. This is a formula where industrialists can show interest from the beginning and elaborate the maturation programme with us. co-financing the work as it progresses - we think the formula will prove increasingly attractive. If the risk elements have been removed at this stage, the industrialists can then proceed to signing commercial licenses" This form of co-maturation will contribute positively to the SATT Lutech's first objective - to be self-financed within 7 years. "At that horizon SATT Lutech will have transferred a sufficiently significant number of projects onto the industrial sectors that the revenues will be able to guarantee out capacity to invest in new programmes and enable the State to withdraw their contributions". offers President Vernis. After two years getting into its stride, SATT Lutech is really beginning to accelerate in 2014. witness the number of licenses foreseen for end 2014 (25 to 40), the first 3 of which were already signed early 2014.

A contractual agreement between SATT-Lutech and UTC

The SATT Lutech and UTC have signed an agreement. "Every week, we meet with Bruno Bachimont, Executive Director for Research activities at UTC, who helped us gain a better understanding of UTC's laboratories so that we could be more efficient

identifying projects that SATT Lutech could accompany in a maturation programme. We have a staff member present half-time in UTC premises and we are currently negotiating a similar contract with the Picardie Regional Authorities. UTC as you know is well implanted and involved in the Region, and this contract will help coordinate our support for local research effort". Chantal adds Vernis. The new UTC Innovation Centre also interests the SATT Lutech. "It is essential that we work coherently and in the same direction. By the end of the year, we hope to be able to handle all the projects and facilitate technology transfers". estimates Chantal Vernis. One of the 22 projects currently maturing at the SATT comes from UTC. It is the IDCCM project managed by Éric Leclerc, based on research work done by the Microfluids and Cell Microsystems team of the UTC-BMBI

(Biomechanical and Bio-Engineering). The objective of the IDCCM project (acronym for Integrated Dynamic Cell Cultures in Microsystems) is to propose an in vitro text to the pharmaceutical, cosmetics and chemical sectors on cells (primary human or animal cells, cancer cells, etc.) that reproduce the in vivo conditions thus avoiding live animal tests. This system leads to test cost reduction, to improvement of their validity, limits animal testing. and allows for simulation of circulating blood circuits, allows also real time in situ analyses and last bit not least to work with human cells to make better in vitro/in vivo extrapolations. SATT Lutech has accompanied this project in terms of intellectual property rights, marketing and also in its technological development. The SATT financially supports the cost of complementary biological testing and the development of a more integrated version of the IDCCM platform. "We shall soon be assessing new projects proposed by UTC-BMBI and we shall shortly be approaching UTC-Costech", notes Chantal Vernis. "UTC's participation and presence in the SATT will increase over coming months, in close liaison with Bruno Bachimont. UTC is used to working with industrial partners, a rather rare situation but which makes for a very enjoyable collaboration. I also hope that we shall be able, as of this year, to approach UTC's undergraduates proposing that they consider projects for corporate start-ups. Two graduates have already launched a start-up after maturing in the SATT environment, TEM Proiect in the field of musical creation. UTC's students have a real role to play in these interactions".

Laboratoire BMBI : http://webtv.utc.fr > Nos séries > Les laboratoires de recherche

SATT LUTECH

Industries: test molecules without animal experimentation

When Eric Leclerc and his research team presented their bio-reactors to the SATT Lutech in 2012, his intention was to validate the project to set up a company on the basis of this new equipment and on the results of the research work carried out at the BMBI Laboratory (Bio-mechanics and Bio-engineering). There are some industrialists who have already expressed their interest but some work still remains to make the reactors easier to handle before commercializing them.

n the beginning, Eric Leclerc's team had designed 1 square centimeter bioreactors, on which human cells could be grown and observed in 3D. The result is a far better cell function than with traditional petri dishes. "Other parameters, such as the level of concentration of soluble matter or the material liners of the bioreactors that affect oxygenation also enhance cell activities", explains research scientist Leclerc. In order for these bioreactors, also known as labs-on-chips, to be used on an industrial scale, they are installed in parallel on a test-bench platform. That way, they can undergo continuous and stringent testing. "We imagined a box with 12 bioreactors since this arrangement guaranteed a higher degree of flexibility, to test in situ various doses, products, flow rates and other parameters", underscores Eric Leclerc. It is also possible to position membranes in series with the bioreactors inside the 'box' to simulate various human barriers such as the skin or the intestines. In this way, the molecules tested in the boxes

must be able to pass through these barriers before they reach the

bioreactors. The aim here is to provide pharmaceutical, cosmetology and chemical industrialists with an efficient tool to lab-test their molecules. gaining time and avoiding having to carry out certain tests on animals.

Initial test phase -2013

"I presented my project to SATT Lutech in 2012. who then proposed that it be assessed by students at the business

IN-

This is the bioreactor we are

school

SEAD. Fontainebleau. Three



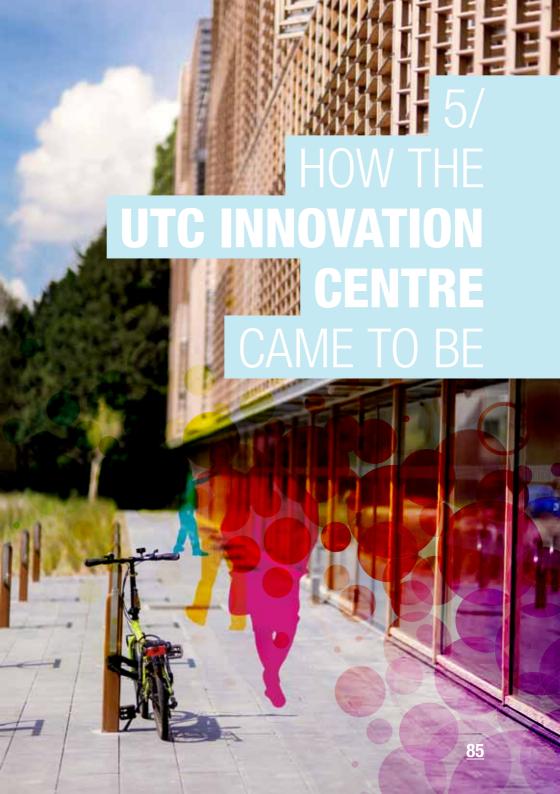
them selected this proiect in the framework of an in-house competition for enterprise creation, and they won, says Éric Leclerc, proudly. With excellent this omen. the students in question continued to support the project throughout their studies at INSEAD before presenting it to the SATT investment committee. It was designated IDCCM, standing Integrated dynamic cell cultures in microsystems. Again the project was selected, with the proviso that prior tests be carried out with a contractor outside the UTC-BMBI Laboratory to assess and validate the relevance of the results. "The tests carried out in 2013 revealed that the handling of the box was difficult and not in line with the intended use", reports Eric Leclerc. "Consequently, the SATT asked us to improve design features before making more tests and validate the better efficiency rating expected"; That is the prime

aim of work ongoing at moment, focusing on two aspects: choice of materials and design. How, for example, are we to avoid that someone who starts working with a box does not introduce a bubble? What materials are best suited to meet the needs in terms of biological activity and mass production of the boxes? In parallel to SATT Lutech. financial support has also been forthcoming, for almost two years now, from the national research assessment agency (ANR) to carry out the optimization of the device.

First industrial contacts

We are moving forward, cautiously, because we do not have unlimited means. The costs to develop such a device are enormous and we hope to receive some complementary funding form SATT as soon as we have met and implemented the recommendations of their investment committee".

adds Eric Leclerc. As he sees it there are many advantages to be 'under the wing' so to speak of SATT Lutech: the contact established with the IN-SEAD students, access to seed funding to test the IDCCM project and initial results, support in the search for solutions to improve the device, presentation of work and progress to the SATT investment committee. opening prospects to new potential funding sources to continue to develop the project, full assistance to register patent claims... The ambition today is to solve the remaining technical problems and the certification of the device as being relevant to create the enterprise (s planned) that will commercialize the box services to the industrialists or sell the boxes directly. "We already have contacts with potential industrial partners to test certain types of bioreactor on their own applications". underscores Eric Leclerc.



#3 July **200**5

TEST

Setting up an innovation centre

The Saturne Project is the prototype framework for an Innovation Centre that UTC will be launching shortly.

he so-called Saturn **Project is currently** (temporarily) installed in UTC's Pierre **Guillaumat Centre and** occupies 350 m2 floorspace. It is with this prototype project that the concepts underlying the future centre will be tested and certified. When this phase is completed the Centre will be built near UTC on some 3 000 to 5 000 m². "UTC needs to see its research and studies protocols evolve, hence the decision to build this new Innovation Centre. It will be a supportive tool for research, training and industrial valorisation technological and transfer such that ideas can be transformed into products services whether new or improved or simply lead to new ways of doing things", details Bruno Ramond, Project Saturne Manager.

The Centre will not offer services, nor will it act as an advisory agency, nor as a research establishment working on a well-defined technical area, nor a design centre and even less so a start-up nursery. In essence. the Centre will act as a platform to integrate accompany and innovation process for the purpose of management of collaborative projects. Thus, each company, when it comes to the Innovation Centre will be in a position to co-operate with other companies working in other areas. The Innovation Centre. or "technocentre training unit" will help team working and bring in contributions from every



walk of corporate life. "the Centre will focus on preliminary collaborative design, i.e., the art of combining those skills needed to move from having an idea to building an operational prototype", explains Thierry Gidel, Deputy Project Saturne Manager.

The future UTC Innovation Centre inasmuch as it will be supporting students, research scientists and industrialists has a bright future ahead. Certain companies are 'signing up' for project work even before the Centre is built.

PERSPECTIVES

The contribution of social sciences to engineering training today

A strategic axis adopted by UTC and its TSH Department (Technologies, Humanities and Social Sciences) will consist of identifying and problematizing situations that modern engineers will have to face professionally.

e can no longer see philosophy. sociology. gnitive science, economic and indeed all social sciences and humanities as mere add-ons factors contributing to the comfort of our souls, on top of qualified engineering skills. "Engineers today and tomorrow will facing day-to-day be issues that involve social sciences and humanities". explains Hugues Choplin, research scientist and lecturer in charge of the UTC-TSH Department.

How to train project managers to adapt their views to innovative concepts

The UTC-TSH Department will be a focal point for thinking and peda-

gogical innovation, and results to be implanted entrepreneurial an context. "Our range of skills runs from research activities to the company structures per se. Via management and cognitive sciences, ICTs, sociology, philosophy, we shall be intent on training our student engineers to encompass the concepts, methods and tools in a direct relationship with real industrial problem areas and the needs for the management of innovative projects. If innovation is defined as "transformation or an improvement of an idea into a new product or service before reaching the mar-

ket-place" (OCDE), then

industry, by this definition, will need increasing numbers of project managers with appropriate skills in innovation concepts and design", pursues Hugues Choplin.

Providing the tools to "think technology"

The idea here is to induce student engineers to reflect on their skills and responsibilities, in a renewed vision of can no longer the situations see philosophy. he or she will sociology, cognitive have to face science, economic and during indeed all social sciences and professional humanities as mere add-ons career. Sofactors contributing to cial science the comfort of our and humasouls nities as taught at UTC are included alongside the technical engineering training and

designed as a function

of probable future situations, the contexts and the constraints combined. "Being a working engineer means being confronted with a lack of devices to capitalize on knowledge, or on return of experience. Our ambition is to provide students with the intellectual tools to think about the way technologies become intimate ingredients of our daily lives and human activities and to understand the social appropriation of these technology-intensive tools, in terms of economics, politics and considerations. ethical In short, training engineers capable of lending meaning to technological innovation", underscores Thierry Gidel, UTC lecturer in charge of the Management of Innovative Processes (MPI).

Interface engineers

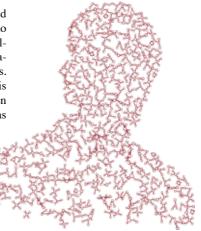
39% of professional engineers in France today are project managers and the percentage rises to 44% if we look at the age range 30-44 (CNSTIF statistics). In this light, a modern engineer is a sort of "interface actor", a go-

between capable of dialoguing with the managers and with the technicians and to ensure efficient exchange between these worlds. As Frédéric Huet (a UTC-Costech economist) sees it, "industry need engineers capable of understanding strategic challenges facing companies and to translate these into technical specifications. In short, engineers capable of taking into their stride situations that relate directly to corporate performance and to the added-value of the goods/ services sold".

A collaborative platform designed for situations as they occur and develop

The challenge identified in social sciences is to bring students "act intelligently and appropriately" in given situations. For this purpose, UTC is notably planning to open an Innovation Centre, as a "support for students, researchers, lecturers and industrialists. Il will constitute a platform to integrate and ac-

company the innovation process in collaborative project work", explains Thierry Gidel. "The role assigned to social sciences will naturally be extremely important since one of the specific features of the Centre will be to incorporate and account for human factors. The aim is to see the Centre as a place where people want to work together, want to innovate, where decisions taking can be implemented but also include moments to prepare the next steps or simply to breathe and recover".



#18 Aug./Sept. **2012**

NEWS IN SHORT

Ceremonial laying of the UTC-Innovation Centre corner stone,

in the presence of Delegate Minister Bernard Cazeneuve (European affairs, French Foreign Office)

The ceremonial laying α f UTC's Innovation Centre corner stone took place Sept 6, 2012 in the presence of Mr Bernard Cazeneuve, Delegate Minister in charge of European Affairs at France's Foreign Office. The new Innovation Centre will act as a support for the local innovation eco-system, in the form of a combined research, training valorisation. industrial and technological trans-



fer platform, integrating and accompanying the innovation process in the context of and management of collaborative projects.

#20 February **2013**

THE UTC INNOVATION CENTRE

Focal point for exchange and emulation

The construction phase of UTC's Innovation Centre will be completed in 2013. The question now arises 'what will front-line innovation actors find there? The Centre's Director, Bruno Ramond, describes the installations and some of the future possibilities.



approach the inauguration of the 5 000 m^2 . we can clearly see the overall scheme. The UTC Innovation Centre will definitely be project-intensive, evolving round 3 major poles: research. innovation and entrepreneurship. How will the poles operate and what are their objectives? The Centre has been designed to attract students, studentengineers, enterprises, financiers. lecturers

and research scientists. thereby building up a locus or focal point to exchange, to enhance creativity, to gain in efficiency ... The Centre will equipped be with some interesting "structural" set-ups, e.g., the virtual reality (VR) room that enables visual immersion in a predefined world. "We shall be able to propose VR visits to new buildings or to analyse in slow motion, for example, how car components react in a crash situation", details the Director Ramond.

railroad network simulator will also be available as well as a prototyping workshop. The first few projects of the Centre are progressing well, while awaiting the delivery of the Centre facilities. "We are currently testing project typologies that will, when vetted. be admitted to the centre. Several

start-ups are also in the pipeline", adds Bruno Ramond, with obvious satisfaction As far as the economic actors are concerned. operational mode will offer an opportunity to collaborate with pluridisciplinary teams in the work-conducive spaces of the Centre. designed as they are to enhance exchanges and mature projects, from blue-print design stages to product or service marketing. "What we do not aim to do is compete with existing industrial laboratories, but rather bring together various skills to help make innovation progress", stresses Bruno Ramond

The industrial group Dassault Aviation is a partner, as are the two French Regions of and Haute-Picardie Normandie, supporting the Glass Vallée project that started 2 years ago. Students will be able to propose innovative bottling solutions for the SMEs that work in this luxury market sector, based in the Bresle Valley and currently faced with stiff competition from Asian countries. When the Centre opens officially, more activities will be launched. "Each project will integrate course credit possibilities - in this way the UTC undergraduates can meet exchange with the Centre residents". underscores Bruno Ramond. "We shall also offer special rooms that guarantee confidentiality of private conversations, plus office-space that we feel will stimulate creativity and intellectual emulation!"

#**27** April **201**4

INNOVATION FAIR

UTC's Innovation Centre, 'avant-premiere'!

UTC Tremplin (the University's alumni association) is organizing the First Innovation Fair UTC. April 3 will see the opening of the UTC Innovation Centre, a meeting place for UTC graduates and local enterprise to present the facilities' state-of-the-art equipment and to invite them to house their innovation projects here.

lhis open-day event also coincides with France's Engineering Day launched by the Federation of Engineers and scientists of France (IESF). There will be 4 special moments to mark the day. A walk-around discovery of the Centre and some projects presented by UTC laboratories, a speed dating session with the day's visitors to lead on to "Improbable possible Encounters", a presentation of some innovative companies launched by

UTC graduates and a conference lecture on the theme "Engineering almost beyond belief" by Jacques Honvault (engineer-photographer, inventor of differential synthesis and ultra-rapid photography). As Céline Keldenich, Delegate General of UTC Tremplin sees it: "Our aim is to bring together various segments of UTC and the actors of the local innovation eco-system round the new Innovation Centre and explain how the technological platforms can be used

by both enterprise and the graduates, and also to enhance the encounters among potential users of the Centre's facilities and services". April 3's events will not preclude the Centre's official inauguration ceremony, a few days later. The organizers hope to see about 100 visitors for the first Innovation Objective: Fair. they come back with their projects.

www.tremplin-utc.asso.fr

