

THE 40 YEAR CONFERENCE,  
PARIS-SORBONNE

BENOÎT THIEULIN  
LOOKS AT

THE TIMR LAB  
DANIÈLE CLAUSSE

#Innover\_  
Innovation

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of a UTC 'black box'

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Donnons un sens à l'innovation

# Interactions

FROM THE PRESIDENT'S DESK

## UTC-Compiègne 40 years hence?



With a touch of temerity, I must confess, when I was asked the above question I tentatively replied, by way of a conclusion to the book "UTC-Compiègne: 40 years of innovation", that it should become "A European University daring to address innovative and

creative technology issues, in the war of ideas faced with societal challenges".

A School of engineering where training and research lie at the heart of the triptych – Technology, Society and Man, anticipating industrial, digital, cultural and societal change".

I am delighted to note that Bernard STIEGLER's vision, summarised in an article in this issue, backs up what I said on several scores, notably in positioning the digital paradigm as a major element on which the future development of our University must rely (and here UTC-Compiègne has numerous assets and skills); likewise when he underscores the need for technological progress and development to remain in phase and in touch with other social systems.

In the context of our 40th anniversary, my personal wish is that we discover the ways and means to achieve such a vision in an economic, social, cultural and political environment, immensely different from what we experienced in the 1970s. It will call for lots of clairvoyance, determination and intelligence; we shall have to face 'adverse winds' again; we must strive to avoid standardisation, commonness which threaten our chosen academic system. Our approach, embodying "contributive innovation" will certainly be a key to future success. ■

**Alain Storck**

President and Vice Chancellor UTC-Compiègne

LES  
DOSSIERS

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**UTC-Compiègne recognised in  
The innovating digital universe**



SPÉCIAL  
40 ANS DE L'UTC



### The fête : 'Gown in Town'

July 4, 2013 – UTC-Compiègne celebrated its 40th birthday with all the campus personnel, alongside the shop-owners of the city, the partners in the local authorities who all took

part in organising the day's events, on the principle "gown in town" [the university in the city]. Compiègne Town hall and the shop-owners had set up 3 or 4 relay stations to "feed" the 300 runners/racers (on foot, on bikes) all dressed up in the UTC colours. In the afternoon, a 'mystery tour' took 909 more participants to discover the very first UTC buildings when it was created in October 1972. Between 600 and 700 took part in a glorious and welcome sunny day to the déjeuner sur l'herbe picnic, while others went country dancing, photo-shooting and even a balloon trip over the countryside. The evening's events opened with President STORCK's bestowing of the insignia of the Légion d'honneur on Ghislaine JOLY-BLANCHARD, former Head of the Pedagogy & Training service, in the presence of the Academic Rector (Amiens), City Hall and Picardie Region representatives (cf. <http://www.webtv.utc.fr/>). The day was not until till late, with its soirée dansante to demonstrate to all the dynamic flavour of UTC and its co-operation with all. ■



### The video "40 ans d'innovation" 40 years of innovation

The same day, an exclusive showing was made of the video-film « UTC and 40 years of innovation » that celebrates 40 years of UTC-Compiègne in a tongue-in-cheek manner. Lasting 128 minutes, the souvenirs of the pioneers, the graduates, today's undergraduates and archival extracts come on screen, to remind viewers the extent to which UTC-Compiègne has always been innovative and has placed innovation at the core of its development policies. ■



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## VALORISATION

# Public debate, the digital age and democracy: a primordial challenge for Society

For Laurence MONNOYER-SMITH, Vice-President of the French national Commission on Public Debate (CNDP), the possibilities underlying the digital world should make public debate – currently under threat in France – are evolving.

**L**aurence MONNOYER-SMITH was appointed V-P. to the CNDP at a moment when a major public debate in France, a project called 'Cigéo', relating to deep layer burial of nuclear wastes in a repository near the village of Bure, Eastern France. It proved a particularly difficult debate, concentrating all the challenges possible. "The nuclear industries which were closed shop to public enquiries because of the raison d'Etat, were only opened to public debate late on. The first public debate on disposal of nuclear wastes, in 2005, went quite well actually, but a law adopted just after, in 2006, produced some unilateral decisions, retaining only the deep burial option and leaving out two others, viz., surface and sub-surface disposal. This law had envisaged building several deep repositories on a feasibility test basis, but only one was actually dug, leaving the local population with the feeling that that had been misled as to what was the original objective of the Bure project. Some of the associations were hostile to the ongoing debate, an artificial operation to legitimise the deep-layer burial option which had in fact already been decided, as they saw it", explains Laurence MONNOYER-SMITH. "It should be noted that the law in question does not stipulate that the wastes should be buried at this particular site, nor at this point in time."

### The nuclear option : public debate versus technocracy

The very question of whether the project is opportune or not remains open, bearing in mind that the cost will be in excess of 40 billion euros with commissioning date in 2025. However, certain opponents have prevented public meetings from taking place. "A lack of anticipation by the CNDP and of ways to include participative aspects probably are regrettable. But here we have elected officials (mayors) blocking access to public meeting rooms. In opposing the project in this manner, they are blocking a democratic debate!" stresses Laurence MONNOYER-SMITH. "Debating implies giving the floor to those who fundamentally are opposed to the nuclear option, but their behaviour, call it suicidal or counter-productive, in fact serves to comfort the positions of the technocrats who can thereby decide with the citizens they serve".

### When the digital world aids public meetings

Vice-President MONNOYER-SMITH insists on the fact that this threat clearly endangers public debate: the victory of representative democracy, in the format of the 5-College debate (NGOs, Private enterprise, Trade Unions, State and Local authorities), that was initiated by the so-called 'Grenelle of the Environment' consultations in France that continue today in the form of environment conferences organised by the Government. "If we do not provide the proof that debating actually helps projects move forward in a peaceful context, it will be replaced by pseudo debates and among 'those that know' and the technocrats, at a point in time when citizens display a large degree of mistrust in political

institutions. Democracy will not be protected if this were to happen", worries Laurence MONNOYER-SMITH. In order to produce such proof, the CNDP will need to revise its tools. In the framework of Cigéo, the possibilities of the digital world aid classic public meetings (which are retransmitted live over Internet). There are on-line forums, Twitter® and Facebook® accounts to answer internautes' questions, with a company designated to define a digital participative strategy; thus, a series of contradictory hearings were organised – like a TV plateau where viewers can intervene. The first of these hearings generated 900 connections and 125 questions in 1h30. "Nevertheless, an e-reputation cannot be built in just a few hours. We shall adapt the system, analyse and make good use of the results and continue to innovate".

### Digital, the proximity tool

The CNDP is also modernising its digital presence. Its Twitter account had 176 followers just 2 months after opening. "But there is no reason why this should not rise to 2 000!" A new site will go on line soon to provide the viewer-internautes with all the tools needed to participate, to gain in interactivity, to store and archive public debates, to organise public forums, to exist on the social networks, to mobilise the ingredients needed for 'concertation' upstream of the debates, etc. "As the new academic year begins, we shall recruit a Community Manager. Information must be available before a debate takes place, to identify the relay points, the populations involved, in order to organise and prepare the exchanges. The CNDP must build up a network of local partners that will contact the future participants possible. Digital possibilities don't stop there: they also allow you to rethink the eco-systems that public debates represent, making them more comprehensible and thus bringing citizens closer to the core of the debate", explains Laurence MONNOYER-SMITH. There still remain large areas with huge research potential, beginning with the handling of the data needed and made accessible for a given debate (a thesis will be financed by the CNDP here). Another task, producing a cartographic weighted image of arguments, for the purpose of drafting balanced minutes of the debate, as close as possible to what really took place. "We must be able to explain to our fellow citizens how their contributions were taken into account after the debate ended. The challenge can be summarised in a single question: what should we be doing to ensure that citizens feel involved? The answer to this question forces us to conjugate digital forces at play and more classic tools to invent a revised, modern form of democracy. ■







## THE 40 YEAR CONFERENCE

# Innovation : where do UTC's responsibilities lie?

UTC-Compiegne was created 40 years ago, at a time when the France wanted to see development of innovation, in the connotation provided by Joseph Schumpeter and disseminated in the USA based on the concept of 'creative destruction' summarises the philosopher Bernard STIEGLER. "Today, UTC-Compiegne, like all other French Universities, is faced with a new challenge: to revise that concept of innovation to organise a creative contribution to the field".

In 1973, the model used to pro-format UTC-Compiegne was still unique in Europe – except in Germany, closer to the USA than the rest of the continent. "The context in which UTC-Compiegne was established was marked by Schumpeter's thinking, inspired as it was by Ford in the Western world. That line of thought marked the core of the UTC vision with one strong proviso: continuous innovation. By innovating, Guy DENIÉLOU caressed the ambition to transfer scientific results to technological, social and economic spheres", underlined Bernard STIEGLER, adding some features that characterise the "school": "the aim is to conciliate scientists' work and the industrial and technological sectors from a view-point with a French touch and unique in the world", inclusive of important contributions from social sciences and humanities. Since 1988, Bernard STIEGLER has been tenured professor at UTC-Compiegne (inter alia) and his experience is patent: "Recruiting undergraduates for UTC-Compiegne does not only depend on excellent ratings in mathematics, but seeks a general balanced individuals, some of whom are also brilliant humanities students. I recently ran into one of my former students at a conference – he had gained his PhD in Philosophy."

## The final hours of "creative destruction"

In this light, the UTC-Compiegne model conjugated the need for continuous innovation and the desire to seek a balance between society and technology. "France (and, in a wider sense, Europe) are very particular about this harmonious development, this humanist concept of technological progress. But, even as of 1973 and the establishment of UTC, the model construed by

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Schumpeter began to crumble and showed signs of severe fatigue: the first oil crisis a year earlier the Meadows Report that signalled the crisis ahead", recalls Bernard STIEGLER. Indeed, the economic model built by Schumpeter and Ford at the turn of the 20th century, consolidated as it was in the 1930s by Roosevelt and Keynes, before it dominated the rest of the century in the Western world was living its last hours. "The final collapse took place in 2008", reckons Bernard STIEGLER, "a historic moment, a challenge for UTC-Compiegne: to conceive, to build and to establish a new concept for innovation".

## The technical dimension: a need for compatibility with other social systems

In a world embodying creative destruction, innovation is a sine qua non to maintaining activities. Consumers replace their goods by other goods, provided the new good offer an additional service, a new design, new uses and this form of perpetual innovation is pervasive in Society, increasing more rapid. "We live today in a system of speculative capitalism, where transfer times of new technologies is constantly accelerating, and indeed approaches real time implementation in the digital world", explains Bernard STIEGLER. This staggering rhythm only concedes a very short time to assess the social consequences of the innovations introduced. Philosopher should reflect on the evidence that "The ongoing technological evolution is in conflict with other social dimensions of life. The technical dimension is primordial: there could be no human Society with technologies; Man is Man because he is technically-minded. By developing techniques and technologies, Men are able to develop all the other social systems: the economy, law, education, family, finance, etc. Each system

here must be compatible with all the others if we are to build a stable Society", proposes Bernard STIEGLER.

## A far-reaching dislike for the consumerist society

If we apply this analytic grid to today's Society, we can see the dysfunctions clearly: "Technical and economic systems are at loggerheads with all other social systems: family structures are shaken by the advent of digital tools, environmental equilibrium suffers from resource over-consumption, etc." And, as if a survival instinct is coming to play, we observe a welling phenomenon that confirms the hiatus between technical development and human progress: a far-reaching dislike displayed by individuals and social groups against the consumerist model. "This dislike is still expressed in a paradoxical manner" as Bernard STIEGLER sees it. "The 'alter-consumers' –identified as such in 2004 by an American consultant agency in 2004 –decry consumption without reducing their own! In 2008, an American study revealed that 81% Americans have an a priori negative opinion regarding consumption. Again, in 2004, an opinion poll by Télérama pointed out that 56% French people who watch TV do not like the programmes they watch and today 2 French persons out of 3 no longer apply for their driving license at age 18".

## Privatising knowledge – the consumerists' blind alley

A few examples reveal a behaviour largely akin to that of 'toxicomaniacs': this is the hypothesis elaborated with specialists at Marmottan Hospital, Paris, in cure and monitoring for addictive practices. Our century has run into the blind alley or consumerism. Consequently, consumers are inexorably and progressively deprived of access to knowledge and know-how; consumerism has also destroyed enthusiasm. "The Greeks saw knowledge essentially as an artful, rewarding way of life; the word's root is sapere, which

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## Ten pioneers tell the tale of UTC-Compiègne

"Les 10 pionniers de l'UTC" [Ten UTC-Compiègne Pioneers] is a "live memory" series of interviews which pays homage to the creators of UTC-Compiègne: 10 lecturer research scientists, among whom Jean-Paul BARTHÈS and Daniel THOMAS, there from the very beginning (many coming from the USA) and who forage in their memories and souvenirs to "tell the tale" of what happened, what encouraged them to come to Compiègne and what they discovered and how they were able to contribute! ■



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## A UTC edition to learn all about its "innovation" (hi)story

The book UTC-Compiègne, 40 years' innovation [translated from "L'UTC, 40 ans d'histoire d'innovation"] is a record in 160 pages of photos, eye-witness reports and the year-books of innovation at UTC. You can peruse a few pages (and order if interested) at <http://interactions.utc.fr>. Moreover, if you yourself were part of this (Hi)story, please tell us about your experience, your anecdotes, and thereby share them with UTC-Compiègne today, its alumni and partners round the world. ■

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also gives us sapid, a pleasant favour" recalls Bernard STIEGLER. "Adam Smith had also foreseen this: industrial societies imply "machinism" where workers have lost their know-how, their attention ... in a word, their mind. Today, loss of knowledge impacts on all consumers: in an agro-food industrial world, we no longer know how to cook food, and the day will come when we won't need to know how to drive a car, but just be the passenger and say where you go. Evolution like this is conducive to higher levels of frustration and even the feeling of no longer existing, which is an unbearable thought for Mankind."

## One way out: an economy based on contribution

Apart from its existentialist face, the consumerist dead-end also became critically economic, social and financially violent in 2008. "The sub-prime crisis was only the detonator, the ultimate explosion of a state of artificial solvability of Americans that is currently ruining numerous European countries. The situation has become extremely serious", stresses the philosopher but never with facile pessimism. The scene is certainly not encouraging, and solutions are forthcoming. The digital world offers one of the vectors that allow us to re-invest in knowledge. "Wikipedia, at this historic moment in the history of mind and thought, has the same order of importance as Diderot's Encyclopaedia," feels Bernard STIEGLER. "And this is only the visible tip of the iceberg of shared knowledge". The universe of open software packages and open sources, which authorise access to the source codes and possible authoring of modifications is revelatory of what Bernard STIEGLER evoked and theorised in the framework of Ars Industrialis (Association internationale pour une politique industrielle des technologies de l'esprit) which he founded in 2005, under the heading: "Contribution economics". "The top-down linear Schumpeter model is no longer viable. The new organisation is net-shaped and bottom-up which presupposes that industrial society undergoes a deep-reaching change, as can be seen in Fab-labs (fabrication laboratories) with open access.

## Rethinking our Universities in terms of a digital paradigm

"UTC-Compiègne must necessarily be revised on the basis of this re-organisation", proposes Bernard STIEGLER, "otherwise the establishment would rapidly be condemned. This is the scale of the challenge for its 40th anniversary". How should the change be negotiated? By assigning a role to digital techniques and applications in keeping with its current rate of development. "A digitised world represents a new milieu, a new eco-system that impacts all other forms of activity, recomposes all forms of knowledge, upsets every industrial sector and even our most intimate day-to-day activities, including linguistic behaviour and uses. Frédéric KAPLAN, Head of the Digital Humanities Laboratory at Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, demonstrated how language now evolves under a double pressure generated by the research engine company Google, its reference system and its translation mode. UTC-Compiègne could develop partnerships on this issue of linguistics, via its Costech Laboratory, a trump card with no equivalent anywhere", stresses Bernard STIEGLER. "The whole academic life of the University, from teaching organisation to the choice of research topics needs to be rethought in terms of the new digital paradigm. It's a terrific

challenge when it comes to innovation".

## Building a digital intelligence and Internet's 3<sup>rd</sup> wave

But, if the firewalls are not in place, then hell may break loose. Not to mention the concentration of violence and sex that is everywhere on the Net, nor the issue of programmed obsolescence built in to digital supports that nourishes the consumerist race; one needs only listen to Edward SNOWDEN's revelations about the American Prism programme designed to monitor electronic message media the world over, to realize just how dangerous this can be in terms of democratic liberties and protection of the private sphere. "Any technology represents a danger. We have to build an intelligence of the digital world that will become a new programme for humanity", pleads Bernard STIEGLER. The school of philosophy Pharmakon ("the poison and the remedy") that he created offers discussions on these hypotheses each summer academy organised in August. The way is opened to a third wave of Internet, following on to hypertext links and Web 2.0. "This 3rd wave will no longer be based on today's algorithms that erase all forms of controversy and organise digital consensus, but on new paradigms that enable public debate and safeguard the traceability of ideas and debates". Another focal point – UTC's 40 years and the thematic chosen: 'Innovating innovation', to stay at the cutting edge of reflections as to what gains innovation must be able to offer Society.

"Our century must turn is back on innovation according to Schumpeter to enter into a new era, 'contributive innovation'. In the new system, the engineer becomes the orchestra conductor who accompanies innovation as the company designs and produces it. This is no easy metamorphosis for the university academics: it presupposes that we invent new relationships to power and knowledge", underlines the man chosen by the Geneviève FIORASO, Minister for Higher Education, to redesign a digital university.

## Students at UTC-Compiègne as the actors of creative contribution

First and foremost: we must ensure that research grants focus on digital applications and associate epistemological challenges, in an 'action-oriented research'- framework, with a necessary transfer of the research results to meet social needs as and when research progresses. "Action-oriented research gradually transforms scientists into co-researchers. It became very popular in Norway in the 1960s and it is now proving highly relevant as the digital age unfolds and spreads", says Bernard STIEGLER. "France and Europe cannot afford not to engage an industrial research policy on digital possibilities, failing which we would be colonised by American and Asian actors remotely acting from their countries and we can imagine the subsequent economic catastrophes that would follow on. UTC-Compiègne is one of the most highly developed European HE establishments in terms of industrial research and it is its responsibility to establish a digital research laboratory." The major asset and leverage of UTC-Compiègne lie with its students: "their motivation, their curiosity, their inventiveness, their desire and hunger to understand the world round them and to get involved and committed offer huge opportunities. They will be the actors of creative contribution." ■

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# 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-Compiègne 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 competitiveness. Below we present a description of the eco-system by those engaged in building it, in a dual prospective view, local and European.

**“In the expression ‘Local innovation eco-system’ each term has its importance”, insists 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 competitiveness 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 living organisms do, to seek cross-fertilisation 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 summarises the *raison d’être* of Compiègne’s eco-system.

## A tradition for dialogue and innovation

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 step of the national podium in the field of innovation! UTC-Compiègne, ESCOM, the Institut Polytechnique Lasalle 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 options were decided at that time with UTC-Compiègne and UPJV (Jules Verne, Amiens) contributing, thereby building up an ensemble of tools such as the technical centres (the CVG – valorisation of glucoses and natural products), the CODEM, sustainable construction and eco-materials, the Agro-Transfer centre, resources and territory, etc.).

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

These decisions also saw a confirmation in the creation of two poles of competitiveness, 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 in 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 President of the Region brought together all the available ‘fire-power’ of Picardie to accompany the priority projects, many of which when on to gain their certification. Picardie 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 corporate sectors and the universities.”

## A local response to national and European ambitions

“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 its 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 and innovation”. In September, the Picardie Region will be issuing its

Coordination will be needed, to ensure better visibility and to ensure the link with innovation, financial aids and international ambitions.

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-Compiègne 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.

## Returning to the ‘glorious’ years of job creation

The dynamics of the eco-system are in favour 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 for these 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 must 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 of accompanying the dynamics, financing the tools as needed, such as UTC’s 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-Compiègne, 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-Compiègne Innovation Centre, Amiens that will be created at Saint-Quentin bringing INSSET and IAR 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 the 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-Compiègne also plays this role of 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-Compiègne, the most relevant thing is to build up a regional eco-system and to share governance with local enterprises and local authorities. UTC-Compiègne 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 area: chemical plant, logistics, cosmetics, pharmaceuticals, agro-food, etc. as well as 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 bpiFrance, 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 high-level 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 years 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 synthesis between 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”. ■

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



## THE INNOVATION SUMMIT

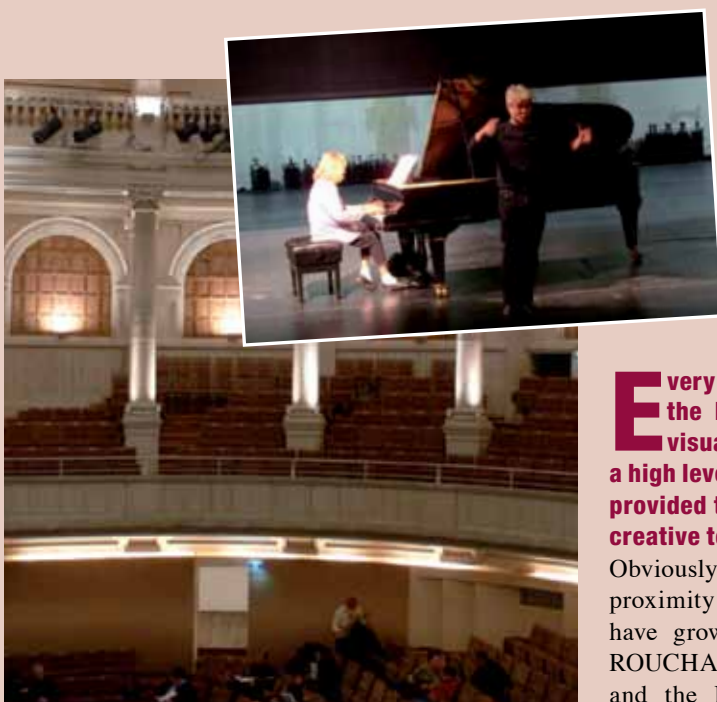
# A European ambition

The idea arose at a meeting in Montreal, between Thomas FROELICHER and President Alain STORCK, during the Summit on Innovation, which was focused on creative neighbourhoods: why not organise an annual meeting on this promising thematic, joining forces between the Picardie Region and French speaking Belgium (Wallonia)?

**N**o sooner said than enacted: thus, an international conference will be organised in Liege, Belgium, November 14-15. "The underlying idea is to understand the mechanisms whereby a given area changes through planning of innovative neighbourhoods. There are some very exciting examples already – in Helsinki, Melbourne, Montreal, Barcelona, Shanghai, San Francisco, etc. We intend to launch a network to share our experience here. We shall also

announce a close level of collaboration between our two universities, and may between our two regions, mentions Thomas FROELICHER, Dean of HEC Liege and Member of the steering committees of both the Compiegne area local eco-system and Creative Wallonia, a programme launched in 2010 (budget 8 Meuros/yr.). Indeed, there is a degree of similarity between the logics deployed in Picardie and in Wallonia: there is no 'dominating' metropolitan area, the whole region is concerned, whereas elsewhere there is a=often a critical mass of some 1 M inhabitants that sets creative actions in motion. "We therefore must think as an eco-system, and the university is at the heart of a transverse programme, that is driving the change of an industrial reconversion and renewing the image of our region", says Thomas FROELICHER. As he sees it, "the corridor from Picardie to Wallonia, between Paris and Brussels could become a creative corridor, leading even to a change of balance of the European Union and to envisage a new strategic approach when the rest of the world focuses on Asia. It is a space that we can now imagine together. Our centre of technological excellence are complementary, notably in

terms of agro-resources. We could also collaborate in the framework of our Master's degree in Creativity Management, recently set up at the University of Liege". Having a European ambition is not just theory. At the end of 2012, Creative Wallonia was designated as a "creative European district", by the European Commission, as was Tuscany, Italy and figures among 40 or so other files. "Through this initiative, the DG Enterprise and Industry would like to demonstrate the role played by CCIs (Créative and Cultural Industries) in the transformation of a region and its industrial transition through added value to its economy through design, creativity and contributions from trans-sectorial collaboration, such as to identify a strong position in global terms of value", recalls the EU representative. For a period of 3 years, Creative Wallonia will serve a full-scale demonstrator. What would be the public policies to bind together isolated initiatives, and how do you go from micro to macro projects and given meaning and direction without putting shackles on the freedom to undertake? Let's look forward to the answers in Picardie and in Wallonia, and at Liege in November. ■



## PARTNERS

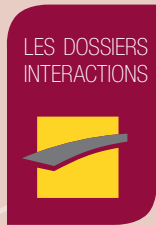
# A cultural ambition

**E**very year 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-Compiegne and the relationships have grown stronger ever since 2009", says Eric ROUCHAUD, Director of both the Imperial Theatre and the Espace Jean Legendre. UTC-Compiegne 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." Eric 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 projects in exhibition form and, in 2015, the Festival of Composites will present two Local Eco-system Innovation labelled projects". ■

It was one of the first cultural spots in France to be devoted to arts and new technologies. The local innovation eco-system 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.



# 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.

**In his opinion UTC-Compiègne 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-Compiègne will officially join the Institut du Véhicule Décarboné Communicant [carbon free communicating cars] 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 PSZA 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-Compiègne, 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. ■

## ENTERPRISES

### EXOTEST

# Enterprises *guarantee emulation*

The company Exotest, created in 2001, specialises in tests for the visible parts of automobiles: ageing under light, resistance to climatic extremes and to various cleaning products, etc.

**Exotest works with automobile sector sub-contractors has publish a turnover for 2012 of 1.5 Meuros.** 30% of this is due to export markets and in this context the world markets are flourishing. CEO Emmanuel BIN is looking for a growth rate at between 15 to 20% for 2013. Emmanuel BIN calls himself a networking man, and, inter alia, is a member of Entreprendre Picardie, and to the pole of competitiveness i-Trans. "Innovation arises through exchanges between corporate managers, by emulation that comes from

these discussions, these observations, this first-hand experience. It is always the corporate head who decides to go ahead and innovate", says a man who sits in on the technical meetings that prefigure the eco-system as a representative of Exotest and Entreprendre Picardie

## Simplify, simplify...

"We are trying to make the concept evolve over three years", he says. "It's very important for the CEO to get fully and personally involved: academics can invest time and budgets but SMEs cannot, and without our implication, we could almost be sure that no company would be interested. As the prime users, we are the guarantors for correct functioning of thy eco-system". Let us not however believe that all CEOs can bring an added value to the eco-system: "We must bring together those who wish to invest beyond the boundaries of their company, those who are willing to sometimes

lose some money and time in meetings, but who remain registered both in the process and its societal logic for the sake of development of local economics," stresses Emmanuel BIN. "Under such conditions, the eco-system can only bring innovation to the fore, via a projection and a movement to keep its added value over a 3-5 year span". The interest of an eco-system, in comparison with existing networks, is that it opens the doors to academic research, a function normally kept at a distance from the daily concerns of any PME. Care must be taken to correctly identify the door-ways able to finance the innovations and to simplify as far as possible. "We shall be extremely cautious about this: Exotest would be quite happy to offer time on its test rigs." Next stages: to communicate with the other CEOs formation (CGPME, Entreprendre Picardie, CJD, APM, GERCO, etc.) to convince them to join the eco-system as partners and members. ■







## AIR FRANCE

# Students and industry : win-win relationships

After gaining his UTC engineering diploma in 2010, Laurent DALLONGEVILLE is now responsible for Fleet Performance Analysis at Air France Industries. He has already hired UTC undergrads to work on innovative projects “Their motivation and their unspoiled vision are very precious elements for us”.

**The first project was to do with design of fuel tanker, on which Laurent DALLONGEVILLE worked in parallel with his own teams and a group of students.** “Their unspoiled vision on an industrial project proved very interesting; it allows them to design a novel product”, he explained. The following year, on a personal level, he proposed that some students install a professional network on the biotechnology field, which led to the organisation of an associate event in November 2012.

## Using external skills to innovate

“I like to mix people and colours in terms of project team building – it’s an approach that is very rewarding at Air France. Crossed partnerships between the universities and industry are always winning situations: the students receive training on real, concrete problem-solving – something I always appreciated when at UTC and the industrialists can gain from the extra skills, while some larger scaled organisation have difficulty making the best of the situation”, details Laurent DALLONGEVILLE. “In a structure with several thousand collaborators, it sometimes proves longer to find the right person at the right moment to deal with the problem, notably on projects that impact our day-to-day operations”. A large number of projects can be studied at Air France, dealing with organisation, with more technical matters, around 4 professional



occupations: aircraft maintenance, engines, equipment and aircraft structures (bodies). All such activities take place close to the two Parisian airports, Orly and Charles-de-Gaulle, and it is obvious that the local regional (Picardie) environment can benefit too from the work. “To illustrate this, Air France is currently investing several million euros to modernise the passenger cabin space. If an SME proposes something here, and it is innovating, then it is an opportunity. A local innovation eco-system can favour circulation of information to cover this sort of situation,” stresses Laurent DALLONGEVILLE, who would like to invest actively in various meetings and information sessions of the eco-system. “Dynamics processes such as these are always very rich because they bring expertise and reactivity close to industrial realities”. ■



## BRÉZILLON

# An eco-district opening up

Brézillon is a subsidiary of Bouygues Bâtiment Ile-de-France, the Home Offices of which are at Margny-les-Compiègne, the company Brézillon employs 1 300 persons. The ecosystem for Brézillon has led already to the building of an eco-district at Jaux.

**“Ever since the company was founded 85 years ago, Brézillon has always been in Picardie. What we want to is keep our Picard roots and at the same time to project the company beyond the Region;** that is indeed why we are actively involved in the eco-system” says Pascal LAMBILLOTTE, Deputy CEO. “And we did not want to limit our relationships to the University in just regularly hiring its graduate engineers. We need their talents for innovation to build today’s and tomorrow’s eco-districts”, explains Pascal LAMBILLOTTE who is an active participant in the ecosystem workshops.

## Patience and perseverance

The first joint project signed between Brézillon and UTC-Compiègne is now under way with the building of an eco-district at Jaux, with 500 lodgings on a part of Greater Compiègne ; it should be readied in about 5 years’ time. Reflexions are under way as to the uses, the needs, solar input, energy consumption, etc.: which are as many subjects that must be taken into account bot at Brézillon and at the University. “Brézillon has also built eco-districts, but obviously each new project integrates the most up to date techniques in a continuous improvement logic ; for the UTC research scientists, it gives them the opportunity

to shift their ideas into the market place, to valorise their work directly in situ” explains the Deputy CEO; for whom the ecosystem offers a suitable framework to encourage dialogue among the local authorities, UTYC-Compiègne and the entrepreneurial world. These worlds are often far apart. “The ecosystem is now well organised: what we must monitor is how it progresses, and adapt its procedures if need be, maintain a regular rhythm of meetings, all of this with patience and perseverance. Brézillon will provide expertise and makes its time and skills accessible: we want this local ecosystem to thrive. It is my belief that we would all be immensely disappointed if this highly useful, dynamic, ide fell through, in time”. ■



**BOSTIK**

## 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.

**This 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 of the eco-system”**, notes Jean-François CHARTREL, adding “there have always been exchanges and relationships built between Bostik and UTC-Compiègne, because we desire to increase yet again the number of patents we register and to gain in competitiveness. The R&D establishment for example is a meeting place where academic research (theses and post-docs) come together with industrial research. We have, to illustrate, just set up a research collaboration 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

PIVERT (green chemistry)”. For J-F CHARTREL, the eco-system offers the 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 competitiveness 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 I have to speak with them. The Innovation Centre will be a jump-board 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

**Bostik**

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. ■



**FAIVELEY TRANSPORT**

## The local ecosystem seen as a *vector for coordination*

Faiveley Transport is a railroad equipment manufacturer, based at Amiens with 330 employees all working on R&D missions. As Guillaume LUCAS, their CEO sees it, the ecosystem must introduce coordination in the Picardie Region among the actors so they can rapidly identify the ‘levers to innovation’.

**Faiveley Transport, for example, is working on the new brake systems for Alstom’s and Bombardier’s regional trains (TERs), also for the German high speed train (Germany) and houses a world class braking skill unit for tramways.** Apart from hiring UTC-Compiègne graduates, the company is collaborating with the University to make TGV brake clamps lighter. “UTC-Compiègne has carried out the computations and simulations and has contributed to identifying new materials and processes” observes Guillaume LUCAS. “We are also launching a new project with the University and IndustriaLAB – a regional platform for industrial innovation – on the theme of brake resistance to

major cold spells as experienced in Russia”

### Speaking the same language

G. LUCAS proposes to welcome trainees on internships, also to make their test rigs available and to invest personally in the work of the Advisory Board. As he sees it, the ecosystem must allow both academic and economic sectors to speak the same language. Innovation for academics can be an end to itself but for industrialists there must be a market niche and business opportunities. “The means exist in the Picardie Region, with UTC-Compiègne, UPJV (Jules Verne), the CETIM, the i-Trans pole, etc. We only need to see that the actors

talk to each other and avoid wastefully doubling up their efforts and getting dispersed. The ecosystem will prove successful if it clarifies its mission – clears out the brush-wood of “gateways” and identified the actors really involved in innovation, thereby justifying a regional industrial vision”. To do this, we must list all the skills in the area and make them accessible and readable. “But the truth is that everyone is making his own diary contacts and phone books! The ecosystem must not simply add another layer to this multi-layered cake, but rather coordinate the efforts of all. It is the sine qua non condition if we want to build an innovation dynamics” , concludes Guillaume LUCAS, whom we can be sure will be monitoring progress closely. ■



Bostik

Faiveley  
transport

Clariant

SANOFI

## Strengthening links with UTC-Compiègne

The Sanofi Compiègne unit produces, inter alia, 160 M packets of medicinal drugs (e.g., Doliprane® and MagnéB6®) and employs 570 personnel. Philippe GAUTIER, Site Director, pays special attention to innovation in all its forms.

**“For the past two years, we have organised an in-house competition – this year producing 19 applicant files”, he explains.** “At Group level, our Innovation Trophies reward the best projects implemented on Sanofi sites round the world. Innovation does not just consist of major technological breakthroughs, or on new products that must comply with tight regulations and economic constraints, but also on small super-practical improvements, in management practice, in logistics, rapidly implemented that contribute to the site efficiency and team cohesion”. In Compiègne, there are 40 persons responsible for our industrial development. The site has 700 of finished products,

some 60 active principles and 130 pharmaceutical formulae, in general public medicine, original formulae and generic products. “Since 2010, our main market thrust has been towards North-America’s public outlets and our activities have been developing in France after transfers from the USA and the UK”, notes Philippe GAUTIER.

### A world training centre : the Lean Academy

A special feature worth noting at the Sanofi-Compiègne site is that it is the group’s world-level training centre for ‘lean manufacturing’. Almost

everyone at Sanofi has been in the Lean Academy classes. The company has just joined the lean club in the Oise Department. Philippe GAUTIER also is a member of 2 local networks, GERCO and Créati, the aims of which are to engage forces in the major companies to encourage and enhance development of the SMEs. “But Sanofi as yet has not been oversolicited, since our activities are highly specific”, explains the Site Director, very interested in UTC’s local innovation eco-system. Already 5-10 trainees are taken in each year. “But our relationships could be strengthened in the framework of the eco-system,” assures Philippe GAUTIER. ■

REVIATECH

## Creating *conviviality*

Reviatch 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.

**R**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. Reviatch 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 ... Reviatch has a turnover of 100 000 euros and advises UTC-Compiègne on its choice of equipment for the future VR room at the Innovation Centre. “The relationships that UTC-Compiègne 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 SBAOUNI 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

Reviatch 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 Reviatch, an industrialist and UTC-Compiègne. “The local ecosystem enables other enterprises to build up special relationships with UTC-Compiègne if they have joint interests, and also Reviatch gets the chance to widen its knowledge about the universities laboratories and ongoing work”. The two



young CEOs advise that communication/PR be 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. ■

## Up-to-date installations that should be put to good use

Clariant is a subsidiary of the Swiss mother-Group, employing 550 persons at their site in Trosly-Breuil. Here we have a sizeable industrial actor who is interested in the concept of green chemistry and in valorising certain technologies in the framework of the ecosystem.



**Clariant is already member of the IAR (industry and Agro-resources) world class pole of competitiveness and of PIVERT with the objective to substitute its current raw materials with renewable matter.**

"We are quite open to having discussions on green chemistry," observes Gilles ZUBERBUHLER, Chairman and CEO. "Our key molecule today is 1,4 dioxane, valorised in markets ranging from agro-chemical to textiles, not forgetting synthetic aromas and detergents".

### Beware of getting dispersed

Clariant would also like to give some publicity to its very up-to-date equipment and would like to inform the other ecosystem actors: e.g., their microwave technology and extractor for super-critical CO<sub>2</sub>. "This equipment could (should) be used in the context of collaborative projects", suggests Gilles ZUBERBUHLER. "The micro-wave facility allows to heat matter very quickly to high temperatures, for certain selected clean chemical reactions that we need to valorise co-products of our industrial processes. The procedure we use to extract super-critical CO<sub>2</sub> is simpler and more economic in energy than the usual distillation process, for applications in detergent agents, for example." Another proposal: Clariant has 150 000 m<sup>2</sup> of land. Anyone interested? We now have to find the

proper arrangements for dividing intellectual property rights and hire contracts should enterprises wish to use the facilities and the land space. So what might the eco-system provide with respect to IAR and PIVERT? "An extra dimension, a framework that goes beyond the scientific thinking, generating new contacts, new ideas that will fructify if the meetings are organised on a regular schedule" reckons Clariant's Chairman. "Our managers will join the circles of the ecosystem that are deemed relevant to the company business. There is one risk, that of being dispersed, or of limiting the ecosystem to a polite conversation club formation; we must always bear in mind the original objective: to innovate by combining usefully a structured approach with degrees of freedom". ■

### VALORISATION

## A « Labcom » at UTC-Compiègne

UTC-Compiègne and Deltacad were selected during a first call to tender launched by ANR in the framework of its government programme 'Labcom'.

**« This programme is one of 15 announced by Geneviève FIORASO, Minister [for HE and Research] last November to boost the country's competitiveness through innovative actions, with one leitmotiv – efficiency on every floor. The ANR [national assessment agency] simplified its procedures in respect to the Labcom programme" underlines Vincent BRUNIE, Head of this programme and Director for Performance and process Improvement at ANR. Simplified dossiers, assessment every quarter, time to decision reduced: the objective is to be able to select 100 labcoms by 2015. "We select a structured relationship between a research establishment and a private company – where we see a will and proof to go beyond simple ANR funding and not just a predefined project in a predetermined area. This is a new financial instrument in France to encourage and enhance partnership research and is a small revolution at ANR itself" adds Vincent BRUNIE. The format chosen, that of a joint laboratory is seen to promise innovative thinking and scientific creativity, thanks to interpenetration of academic and economic cultures. Thus, the Labcom programme addresses SMEs, SMIs and ETI (Economic and Technological Intelligence) for whom innovating has become vital, and is a guarantee for competitiveness and growth, but also to research establishments interested in this opening to explore new forms of logic and data that are sometimes far removed from their usual areas of investigation.**

### 'Excellent partnership research projects'

"We received lots of application files after this first call to proposals," says Vincent BRUNIE. "The criteria

we apply are straightforward: relevance and intrinsic merits of the partner, suitability of the assembly. The 7 first Labcoms, at a very good level, propose excellent partnership research projects." For example, RIMeC is seeking solutions for a sector in financial difficulty, the congress organisers, associating LLA [lab. for language and arts] Créatis of the University Toulouse-II Le Mirail) and the company Europa Organisation, one of the European leaders in congress/conference organisation matters. Another is Ortesa, one of the two Labcoms that associates an ETI (Naturex, specialist in natural ingredients for agro-food lines, for pharmaceuticals and cosmetics) and a research establishment (the Green, a research group specialised in eco-extraction of natural products, Inra and the University of Avignon) to optimise extraction processes and look at alternative solvents to do so.

### Dimexp, a new generation of digital mock-ups

The Labcom, coordinated by Alexandre DURUPT, senior lecturer at UTC-Compiègne, is called Dimexp. It is supported financially by UTC-Compiègne and the IT engineering company Deltacad, under CEO Didier PARENTI, a UTC-Compiègne graduate. "We have already managed several joint projects together. Our excellent mutual knowledge, our geographic proximity and the recognised quality of our work in the past have encouraged us to come closer in scientific terms", explains Alexandre DURUPT. "The labcom framework offers us some real opportunities to consolidate our desires. Dimexp is building itself up round an advanced digital mock-up (DMU)." What this means is a virtual representation of a mechanical object, (a plane, a car etc.),

integrating all the data and expertise that relate to its life cycle (design, assembly, simulation, maintenance, etc). "The mock-up conjugates two approaches: organisation with the possibility to fine-tune the missions assigned to the collaborators and operational by integrating the case studies that are taken in real industrial contexts", details Alexandre DURUPT. "This new generation of digital mock-up will concentrate the professional expertise on a single support in which the relevant data will be filtered as the user requests." For this young research scientist, the very selection as a labcom is an excellent recognition of the merits and scientific quality of UTC-Compiègne and the economic health of Deltacad.

### 300 000 euros over 3 years

Selected projects receive their funding in two stages: 50 000 euros to create a joint laboratory (governance contract, work schedules, etc.), that has to be formalised in a 6 month period, followed by 250 000 euros to offset annual laboratory operational costs. This amounts to an envelope of 300 000 euros per labcom, funded directly to the research establishment. "We measure the growth of enterprises after 3 years into the programme", explains Vincent BRUNIE. Alexandre DURUPT is confident: 14 persons from Deltacad and UTC-Compiègne are associated with Dimexp, and the ANR funding has allowed the group to purchase equipment and recruit personnel. Sales of software packages and modules as well as investments made directly by Deltacad will ensure long life into this labcom, integral part of the dynamics of the local innovation and creativity ecosystem. ■





# Looking at the ongoing digital revolution

Benoît THIEULIN was appointed Chairman of the French National Council for Digital Applications in January 2013. He is also Founder CEO and Director now of the digital agency La Netscouade. He sees the digital wave bringing in a new civilisation through what is called “empowerment”, the very basis of Internet.

## What are the challenges raised by the digital revolution?

Well, I can readily identify two: 1° the need to apprehend the digital world as a whole, and 2° to save our values of liberty and autonomy that were in fact advocated by young computer scientists and by the Founders of Internet. Total digitisation of Society, currently under way, is leading not only to a technological and economic revolution, but also social, cultural and cognitive change. It is akin to inventing printing in the 15th Century and the industrial revolution in the 19th Century – progressing with all the pressure of immediacy. To illustrate this, we recall that while the first Bible was printed in the 18th Century in Georgia, Africa today is using certain digital services that are more sophisticated than in Europe! The digital revolution is not only a sector of activity: it is even bringing in a new and deep-reaching change in the way we think. Moreover, and to avoid excesses, the second challenge consists of preserving the frame of mind of the Founders of Internet, who shared a strong political will: to give back to the citizens the powers of calculation and increasing miniaturisation of computers, with a view to providing for a new and greater autonomy. As of the 1950s, these young computer scientists – themselves often college lecturers who wanted to teach, to share and were opposed to the War in Viet-Nam, to a hierarchized society to centralised data in the hands of a few enterprises or states. The digital revolution would only have meaning if it continued on that direction, that of empowerment of the people.

## Can we guarantee this ‘empowerment’?

The digital revolution also gives institutions the possibility to better serve citizens, clients but also to better monitor them, control them. We must therefore always be wary that digital innovation is both made available to the institutions but also to improve individual autonomy, failing which we shall induce rejection and revolt. This is the underlying meaning in the Advice Notes issued by the Conseil national du Numérique (French National Council for Digital Applications) when it refers to Internet neutrality and open data. In this respect, computer generated data (monitoring consumption patterns, expenses, health questions, etc.) do bring an added value to the companies: those that use such data must tell us what they are doing with them; and restore them to the clients so that they too can choose in an informed manner. If in the future one of my consumer

cards tells me I’m buying more sugar and fat than recommended by WHO, I shall be in a position to regulate my consumption as I see fit. Internet has already made a phenomenal number of things possible: I can publish articles, edit videos, and share music with literally billions of people. But, if as we see we can write more, the recent Snowden affair has shown that a State can monitor the total e-mail flow of the world – which is infinitely more complicated when the exchanges are in paper written format. Digital revolutions will always follow this thin tight-rope wire, between Orwell’s Big Brother world and one of total freedom. In the political arena, digital processes have become a too

– President Obama was an almost unknown Senator before the US presidential elections; Ségolène Royal was not a front-runner when the Socialists in France held their primary votes in 2007 and the Arab Revolutions made the most of this tool for concertation, synchronised actions and mobilisation of their forces. Just think, Internet today in Africa allows millions to access knowledge that a European student would never have been able to find even in the best libraries only 20 years ago! The consequences here will become rapidly immense.

## How do you see the role of the Universities?

Even more than yesterday, our Universities must learn how to think and provide the means to think freely. Faced with the avalanche of knowledge round us, how are we supposed to discover the information we really want? The first generation of digital natives is here today and we shall see the effects on them of the digital wave: questions of concentration, dropping memorisation capacity, ‘destructured’ thinking ... The University must have them the capability to learn and to analyse, and to enjoy a self-guided access to knowledge.

## How are digital techniques changing the face of innovation?

The digital world is modifying the fundamentals of innovation, the latter no longer coming from a few scientists or a laboratories – it has become collaborative and collective. Societies today are totally changed: organisation is less pyramidal, hierarchic and is now more horizontal with a collaborative approach to each project. A digital world also takes you away from uniform innovation models – the case in point was Fordism of course – and now we have a hyper-personalised production=everywhere we look. ■

The University must have them the capability to learn and to analyse, and to enjoy a self-guided access to knowledge.

## DID YOU KNOW THIS?

Today there are 6.4 billion mobile phone subscriptions in the world and the forecasts are for some 9.1 billion by 2018. 50% of all mobiles phones sold in the world in the first semester 2013 are ‘smartphones mobiles. Traffic generated by these phones has doubled over the past year.

Source: Ericsson Mobility Report, June 2013. Cf. <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>



50<sup>ÈME</sup> ÉDITION  
17/23 JUIN 2013  
SALON DU BOURGET



The Paris Airshow, June 17-23, 2013, allows the visitors and spectators to discover the latest technical progress in aeronautical and space sectors – both of which are well represented at UTC-Compiegne.

## ROBERVAL LABORATORY

# Acoustic protection for *space launch vehicle nose-cones*

How can we improve the acoustic comfort of pay-loads placed under the nose-cone of future launch vehicles? A thesis is under way at UTC-Compiegne to minimise vibration during take-off.

**W**hen an Ariane V launch vehicle takes off, the combined noise of the Vulcain main engine and the two lateral solid-state boosters is very intense, equivalent to several jet-liners during take-off. The sound wave produced by these rocket engines impacts on the launcher structures, with vibrations that can damage the pay-loads (satellites) that are placed under the nose-cone. In June 2009, UTC-Compiegne signed an agreement with Astrium Space Transportation (AST) (the space sector subsidiary of EADS), the reference academic being Professor Mohamed Ali HAMDI, a well-known figure for his research on vibro-acoustics of space-borne structures. In this field, the thesis on “Optimisation of the nose-cone acoustic protection for space launch vehicles » was financed. “From an

industrial point of view, the objective is to protect the pay-load”, explains PhD student Julien MAGNIEZ, who graduated in Mechanical Engineering from UTC, with the speciality elective Acoustics and industrial vibration. He started his thesis work in Sept. 2011. From a more academic point of view, the idea is to develop analytical computation models that allow you to identify the various relevant parameters and thereby define needed protection and structures for the nose-cone assembly. The noise generated during take-off is simulated by a series of incident plane waves and the nose-cone is taken to be a cylinder in multi-layered composite materials. The methods developed allow you to compute the acoustic dampening and to optimise the character of the materials to be used in order to minimise transmission inside the cylinder

(payload bay). After modelling, experiences are run to validate the calculations. “The final objective is to come up with a structure that will protect pay-loads efficiently, for a low cost and above all be as light as possible”, notes Julien MAGNIEZ. The thesis work will be pursued till September 2014; results will be pursued by Astrium to develop an acoustic protection to be used on the next generation of launch vehicles. The methods developed could also find applications in other fields, “for example, in aeronautics, to improve passenger comfort” suggests Julien. “They could find uses in helicopter design, or even to increase acoustic discretion of submarines”. ■

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## KUKA ROBOT

# Studying *composites with reinforced stitching*

Could we imagine stitching aircraft engine shrouds? This is a possibility now open to aeronautical assemblers to lighten and reinforce this key composite part. UTC-Compiegne is contributing to a solution.



**E**ngine shrouds are circular and cover engines; they also facilitate airflow, lower engine noise, help the aircraft brake and ensure safety.

Over recent years, stratified, layered composites have gradually replaced metal structures in aircraft bodies, because of their low density. Engine shroud design is a good example since they are usually made from organic composites with carbon fibre reinforcements. These materials are layered and able to support high mechanical strain in the direction of the fibres. However, their behaviours outside the plane (in

the depth of the materials), is the main weak point, especially when impacts occur. Adding stitching is one promising way to reinforce inter-layer cohesion. “What we must bear in mind is that adding stitches also has an effect on the planar structure; simply pushing a needle through the layers induced structural results in the fibre reinforcements and these need to be characterised”, notes Justine BIGAUD who is carrying out thesis work at the UTC Roberval Laboratory on “investigation and analysis of ten mechanical behaviour of stitch reinforced composite materials”. This thesis topic is part of a research programme called composite PRCs, financed by the DGAC (French civil aviation authorities) involving companies in the SAFAN Group, plus ONERA and CNRS Research establishments. Justine BIGAUD is working in particular with AIRCELLE, part of the SAFRAN Group, one of the leading actors in aircraft engine shrouds. UTC-Compiegne here is playing a key role in producing stitched rigid structures. “AT UTC-Compiegne, we have a sewing robot called Kuka, that has two stitch heads”, Justine explains, “that enables

us to make our own composite parts with a variety of stitch patterns”. The aim of her thesis dual- the first is to make assembled composite structures with stitching reinforcements. Two type of stitch pattern are used – tufting and stitching where the end assemblies can differ. The second is to study and learn to understand how the materials behave mechanically and the damage mechanisms that can occur, depending on the stitching use. “I am going to test various patterns and assess the advantages and disadvantages of each, to better understand the relationships between the stitching and fatal collapse”, says Justine. The parts to be tested are provided by AIRCELLE, or can be assembled directly on the UTC site, using the Kuka robot. “Several series of tests will be carried out on structural forms”, explains Justine. “I shall then forward the results to ONERA to be fed onto their digital simulation models”. The results of the thesis will be used by AIRCELLE notably to design future engine shrouds. ■



# Journey into space of a UTC 'black box'

Project FASES\* lifted off in June en route for the ISS – international space station, some 350 km above the Earth's surface. UTC-Compiegne is partner to the project which is designed to give a better understanding about emulsion mechanisms, for later use in the petroleum product based industries.

**“This project in fact started in 2001 as a contribution to solving a problem met by oil companies when extracting oil from drilling slurry using water”,** explains Danièle CLAUSSE, UTC professor in industrial process engineering, member of the TIMR (Transformations Intégrées de la Matière Renouvelable) research team – When crude oil comes from the well, it contains water droplets that do not mix with the hydrocarbon oil. This is what we call “water in oil emulsion”. “Moreover, the water effluents are polluted by petroleum product droplets and this is the emulsion oil-in-water”, says Danièle CLAUSSE. “The problem now is how to recover the oil without the water and to reject the water without the oil.” There already are processes to separate oil from water, i.e., to break down the emulsions, but they could be improved with a better knowledge of the mechanisms of how emulsions form, how they break down or can be destabilised. Taking an image, Danièle CLAUSSE adds, “Mayonnaise is an emulsion. It may appear amazing, but it is far more difficult to break down an emulsion than to create one”. This is the object of the FASES study, which will be fundamental to our understanding of emulsions.

## Emulsions in weightlessness

Why use the ISS to carry out this project? Well, in space, where there is no gravity, so to speak, an emulsion will not suffer from two forms of destabilising force, the force that groups to form (water droplets together at the bottom of the recipient and oil droplets at the

surface, which needs gravity to work) and coalescence (the droplets group together because of their proximity, mingle together to make larger volumes either water, or oil but with no droplets any more. This phenomenon is enhanced by convection of droplets moving. With the extremely reduced gravity found in an Earth orbit, both regrouping and convection cannot occur. “This is what happened to Captain Haddock's whisky in Objective Moon. In absence of gravity the liquid escapes from the bottle in a huge floating drop”, says Danièle CLAUSSE to illustrate the point. “By removing the possibilities of either convection or coalescence, we hope to be able to observe all the other mechanisms that destabilise emulsions. In fact, sooner or later, an emulsion will always break down. We the hope to draw conclusions of use to the oil industries.”

## A European project

The Italian oil company ENI Technologie is a partner in the CFASES project, as is CNRI/ICFAM Genoa and Florence. A German team, from the Max Planck Institute in Berlin is also involved, plus two French teams other than UTC-Compiegne, viz., IFP Energies nouvelles and the University of Aix-Marseille III. FASES has received support from the European Space Agency (ESA). “The contribution of the UTC team will be to design an experimental setup to detect emulsion destabilisation in space. For this purpose, a calorimeter designed by EADS ASTRIUM with the help of SETARAM will be used. For our team, Isabelle PEZRON, Audrey DRELICH and Jérémie CASTELLO, participated in numerous tests at the



ASTRIUM sites in Germany and Telespazio in Italy, to develop studies at the Earth's surface and in space”, stresses Danièle CLAUSSE. The experimental unit – a black hermetic box <weighing 35 kg with 16 different emulsion cells on a conveyor belt system – was taken into orbit by the European cargo launcher ATCV-4 and at present is in the FSL (Fluid Space Laboratory) on the ISS. The experiments should be completed by end of first quarter 2014. “The initial results observed are positive: the ISS astronauts were able to create emulsions in space, which validates the formulation “water-oil-tensioactif that we had written. One the general results are known, we shall interpret the evolution of the emulsion we sent to orbit and others”.

d'infos Plus [www.utc.fr](http://www.utc.fr) • <http://www.utc.fr/timr/>

\* acronym for Fundamental and Applied Studies of Emulsion Stability.

## PUBLICATION

# A 40 year of history and innovation

The history of UTC-Compiegne is “immensely rich, surprising, innovative and passionate” to use the words of President Alain STORCK. The demonstration is to be found in a 160 page book edited this year to celebrate the 40th anniversary of the establishment “A 40 year history and of innovation”

**In the beginning, a first class of 83 matriculated undergraduates, a few ‘pre-fab’ buildings, a teaching team of some 30 “often very young” lecturers and one man Guy DENIÉLOU, who was at the origin of the incredible adventure of this “academic UFO”.** “UTC-Compiegne being neither a classic French university, nor a Grande Ecole is apart and occasionally irritating”:

its nickname was “the Patrons’ Private University” ... because it positioned research at the core of its project. UTC was created against the advice of the representative bodies of Higher Education in France. Selection of candidate students, students’ autonomy, use made of contract non-tenured lecturers, organisation by department and by semester, long entrepreneurial placements and an international vista: UTC-Compiegne is revolutionary, in pursuit of the objective to “create a state of mind to face professional problems rather than just accumulate knowledge”. The book retraces the epic story of how UTC was located in the City of Compiègne, how the University gradually expanded and how the Departments grew – Mechanical Engineering (GM), Process Engineering (GP), Applied Mathematics and Computer Sciences (MAI), Technology and Social Sciences (TSH), Mechanical

System Engineering (GSM), Urban System Engineering (GSU). Come 1980 and UTC's consecration as head of the list of French engineering schools (les grandes écoles). With one fear, expressed by Guy DENIÉLOU “I would not like to see our UTC standardised”. As ever, innovation must be the backbone of the project, witness the creation of the Technology and Social Sciences Department (UTC-TSH) in 1985 and the opening of the elective speciality “Technology and Humanities” in 2012, the creation of over 200 innovative start-ups by UTC graduates, rewarding partnerships among the laboratories and the business world, cutting edge research in many fields, establishment of UTSeuS in Shanghai, etc. A reference book, to be read thoroughly and meditated on for the next 40 years! ■

d'infos Plus <http://interactions.utc.fr/Le-livre-L-UTC-40-ans-d-histoire-d>

### The final bouquet for the 40 years' celebrations and disintegration "All together!" September 5-9, 2013

To mark the 40 years since the start of the "first class" at UTC-Compiègne and in the framework of the concept: 'Gown in Town', today's students will be answering societal challenges all day Sept.5, to symbolise a new form of (dis)integration (cf. p17). As a final bouquet to start this 40th year in keeping with the University's spirit of Innovation, the music group ZicZazou, a regional group of 9 -comedy-singing-artisan-inventors & musicians (who compose their own work), will play to this theme exploring the thousand-and-one ways to rhythm and melody line artefacts they make or make use of offering a truly gigantic musical poem!

### The '40 year Conference': "Innovating Innovation" October 29, 2013

To end this year of celebrations, UTC-Compiègne will be holding a conference for its industrial partners (followed by a cocktail) on "Innovating Innovation", at the Sorbonne, Paris October 29, 16h30-22h30, with among the guests Albert FERT, Nobel Prize (Physics, 2007), Prof. Andy C. PRATT, Culture, Media and the Economy, King's College London, Bernard STIEGLER, philosopher, Yann MOULIER-BOUTANG, economist and Chris ANDERSON, inventor and ex Chief Editor of Wired, USA. A dinner-debate will be organised in November for the academics, the economists, the politicians, cultural event administrators from Compiègne and its area.

### The student/enterprise Forum COMUTEC October 24, 2013

The next UTC COMUTEC Forum (student/enterprise) will take place Thursday 24, 2013. This forum brings together more than 80 enterprises each year – 2013 being special because of the 40th anniversary celebrations.

### World summit on Innovation November 14-15, Liege, Belgium

The World Summit on Innovation will be held this year at Liege, Belgium, November 14-15, co-organised by the Université de Liège, UTC-Compiègne and the École de Technologie Supérieure de Montréal (ETSM). For this edition, the theme chosen is "Innovative urban, areas: sustainable and innovative land planning transformation: technological, social, organisational and cultural challenges of innovation in land planning". Details forthcoming in the next edition of Interactions.

## GRADUATES

# Apple : responsibility at the heart of innovation



With his UTC diploma and elective specialty Computer Science, Hafid ARRAS started his internship with Apple in 2006. He had in fact hesitated, between accepting a position in an SME which offered more freedom to the young graduate and a major group, with more facilities; at the Apple trademark, he found a perfect 'balance'.

**H**e went to California for 6 months, somewhat apprehensively: a new country, a new experience and a company that at the time did not have the aura it has today.

But Hafid settled in rapidly into the team, the mission of which was to make the geo-localisation of the MacOSx multilingual. "This is a fabulous area for people working in and with Its; you have a concentrate of persons who are dynamic and in charge of cutting edge projects, an environment with extraordinary emulation", says Hafid who has been living in San Francisco and working at the Apple R&D site where the main decisions are made) for the past 7 years. .

## About 15 UTC undergraduates on internships

They are in fact recruited by another UTC graduate, Jean-Pierre CUIDAD who opens the way for others from UTC-Compiègne. "What we do is review and recommend their CVs and we are now in direct contact with the Manpower Manager of the Software Division at Apple. Some 15 UTC undergraduates have been offered 6 month internships and a few have since been hired", explains Hafid ARRAS. Today he manages a team of 10 working on design of 'tools' to make the voice recognition software multilingual too. The SIRI package allows you to dictate, voice control your phone, etc.? "This application created by an independent start up, was bought by Apple to fully exploit its possibilities. It now is available for i-phones as of the 4S version and also on the latest i-pad model" says Hafid. "The 'app' uses artificial intelligence (AI) and comes in English, French and 8 other languages, among which Chinese and Korean recently. "The app is constantly improved like all other projects that require a very large number of data to work optimally. With the latest iOS7, scheduled for the Fall 2013, I hope users will see the difference!"

## Less theory and more responsibilities

Apple offers engineers three career paths: progress through management levels, more technical expertise for new products or

a combination of both? "These three choices are equally valorised in the company", explains Hafid but he points out the differences between American and French engineers. "The French are better at theory, the Americans have often put together an "app" in parallel to their studies, for example. The America, also know how to present their work better than we do: it's not self-sufficient to have a good idea, you have to sell it and convince the management. Training an engineer in the USA takes 4 years compared with 5 in France – but our UTC diploma is seen as equivalent to a Master's degree when we are hired in the USA". Another difference lies in management. "In the US hi-tech market segment, the inter-personnel relationships are less hierarchy-driven. The manager is more of a coach, an orchestra conductor, than a sergeant-major chief. All the employees have a large degree of freedom, lots of responsibilities and this begins even at intern level. Engineers hold very creative positions and their ideas are taken into account throughout the development stages of a project. To illustrate, one of the UTC interns actually solved the problems related to Arabic language and writing from right to left", adds Hafid. "The onus is on the employees to show they can effectively hold down their jobs and responsibilities."

## Apple still operates today like a start-up

What is impressive, in Hafid's eyes, is that Apple has managed to retain its start-up mode of work, with all the facilities of a major company, thanks to its structure in small teams who each handle and tackle different problems. "There is a phenomenal disproportion in size of teams and the impact of the product on which they are working. It simply is wonderful for an engineer" notes Hafid enthusiastically. So why does he no longer count his time on the job? "I just love working in this mutually confident ambiance where nobody checks when we come or go – in the heart of an organisation where you can learn a lot, from immensely skilled people easily accessible to all". Thus Hafid is constantly in contact directly with the Vice-presidents, to whom the engineers present their progress reports "The VPs then report directly to the CEO-Chairman. All interns explain their work to the whole department and the Director then chooses those that will do their presentation again, for the VPs. This year, a UTC trainee, Sanaa SQUALLI was selected out of dozens of internship projects to present her work to the entire iOS7 Department!" ■



## STUDENT PROJECT

# UTC- together, for the City

The 2013 intake was the opportunity for an exceptional event “UTC-together, for the City”. On Sept.5 some 800 new UTC undergraduates and 400 “integrators” answered a series of challenges for the benefit of the Compiègne citizens.

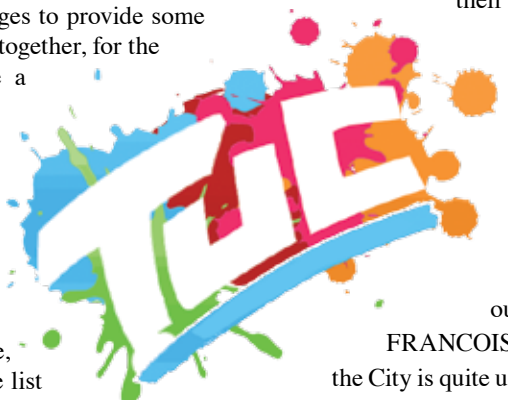
**The concept was quite easy – often, it has been noted, the UTC students know little or nothing about Compiègne and the gap grows when the noise levels of student gatherings or parties gets to an annoying level.** “UTC is an urban campus, as per the Founders’ wishes, notably Guy DENIÉLOU and Mayor Jean LEGENDRE. However, co-inhabiting with the Compiègne residents sometimes proves difficult. The University gives an excellent “image” to the City, which has gained in attractiveness. But this should not negatively affect the way of life here. Over the past few years, we have been thinking about ways to improve living and working together, having the students seen as local citizens, for example”, explains Arielle FRANCOIS, a graduate from UTC-Compiègne

and now Deputy Mayor. “For some 4 years now, the integration (class back) formula has been reviewed to reduce the ‘freshmen fun and games’ and improve the ‘City-Uni’ relationships”, says Hugo RODDE, President of 2013 Class Back Operations. This led to the day devoted to solving challenges to provide some service to the City “UTC- together, for the City. For example, create a proper picnic are on the banks of the River Oise, give cooking lessons in an Old Age Pensioners’ home, straighten up a wall on UTC premises and paint a ‘fresco’ on it, get the students interested in the history of Compiègne, round its memorials ... the list has some 30 challenges, some of which come from the City Services, some from UTC partners (Brézillon, Lyonnaise des Eaux, Société générale, EDF, Macif) and of course from UTC-Compiègne itself. The students then only need to choose where their skills and likes

fit best. “the nerve centre of operations is the Citizen Village, open to all; likewise everyone is invited to the ‘road-side-gigot’ that takes place in the evening as a huge barbecue where the associations of UTC can play their part”, adds Hugo. “The day is one for ‘full contact’ with local populations and we hope that this will lead to discussions and even to long-term involvement! Imagine if the UTC students agree to give their cooking lessons during the rest of the year: we are, in a sense, pushing fate to create contacts, and usually this turns out to be very rewarding”, adds Arielle

FRANCOIS, enthusiastically. UTC- together, for the City is quite unique compared with our back-to-class integration programmes. “It is our avant-garde day” says Hugo, proudly and this integration could be duplicated in many other engineering schools and universities throughout France. ■

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## STUDENT PROJECT

# Mare Nostrum : sports and science combined

From Gibraltar to Istanbul in sea-going kayaks: this is the ongoing challenge for Louis WILMOTTE and Douglas COUET, both 23 years old who have set out for a 10 000 km paddle across the seas they love.

**Obviously this is a tremendous sporting challenge but it is more than that. “Our project aims above all at sending out a message about protecting and respecting nature”** explains Louis WILMOTTE (doing a degree in pluri-technical maintenance at UTC-Compiègne and Douglas COUET doing a Master’s degree in oceanography at the University Pierre & Marie Curie (Paris 6). Both students are very interested in the seas and their riches: Louis, for example, has crossed France from Brest to Collioure (South France) in a solo kayak and Douglas has been a bottle diving monitor. Today they are travelling in a two-man kayak, 6.5 m long, which will be their home for a year. They have an endless list of things on board: food, water, clothes, safety equipment; camping gear, cameras, touch pads for weather and maps, plus equipment as needed for their two scientific missions.

## Toxic algae, whales and underwater noise pollution

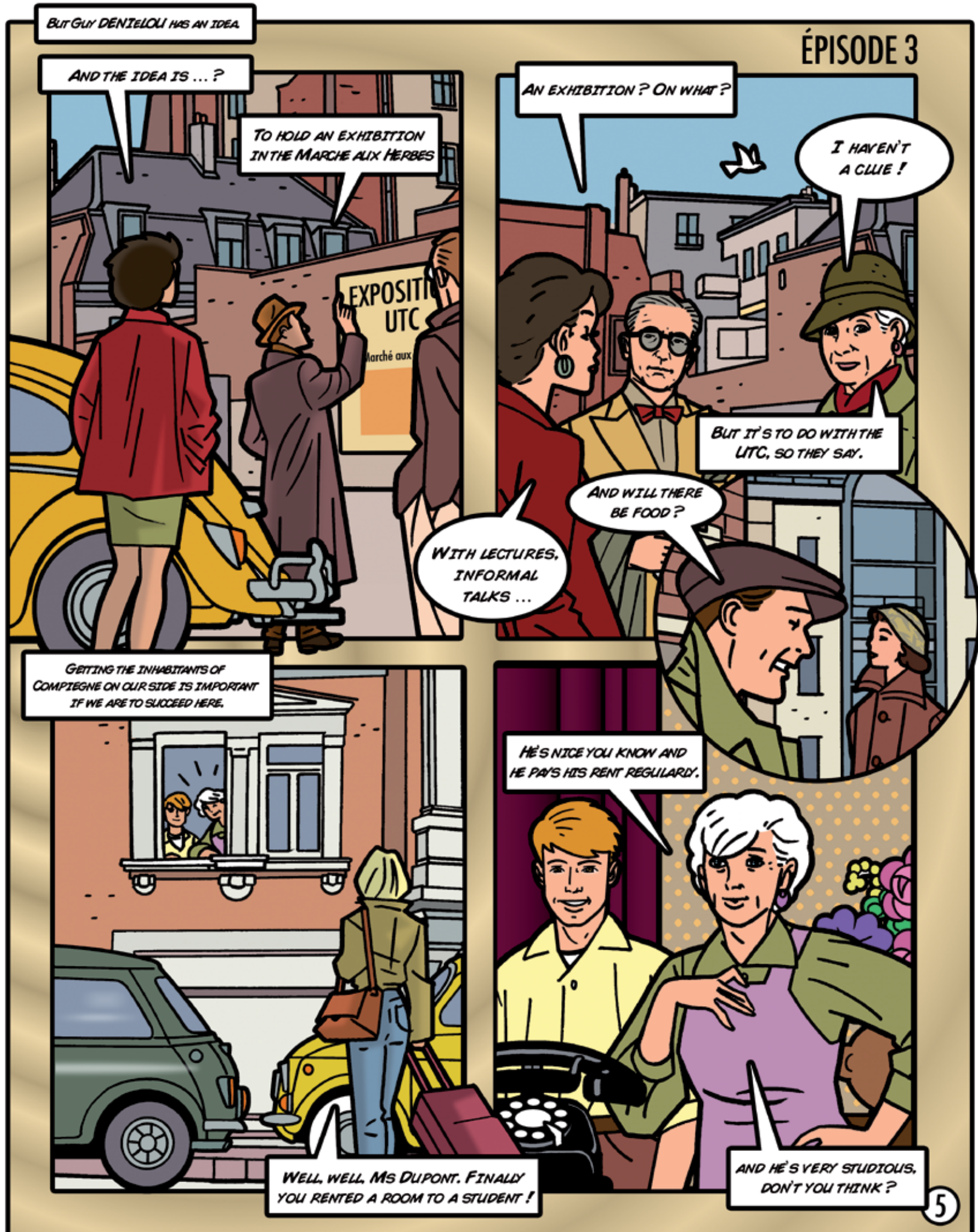
Their first mission is to gather samples of a toxic seaweed, Ostreopsis, which has been spreading rapidly in the Mediterranean over the past 10 years. “This is a tropical species that has colonised the Mediterranean, because of global warming”, notes Douglas. “We shall take daily samples as we progress, during the summer

months, in Spain and France over 2013, then in Greece and Turkey in 2014. We shall send the samples back to the Observatoire océanologique de Villefranche-sur-Mer, near Nice. The samples will enable the scientists to get a better knowledge about this sea-weed which is now a source of ecological and sanitary problems. On the other project, there is a change of scale: the students will be looking at Mediterranean whales and to maritime noise pollution. The Laboratoire des sciences de l’information et des systèmes (LSIS) at the University of Toulon has lent he pair a hydrophone to listen to the large sea mammals and also to record underwater noise pollution “the latter can disturb the eco-systems in terms of intensity and frequency of occurrence”. Each day, they will listen under water and their recordings will be analysed at the CNRS. The pair left Gibraltar a few days behind schedule because of unfavourable weather conditions and at the latest news they are somewhere near Almuñecar, Spain, in fact taking out a few days to rest after a bout of tendinitis. “After 18 months preparation, we were so happy to get the paddles in the sea that no doubt we set off a shade too fast!” Their target, we recall, is 25 to 30 km / day, along the 12 countries’ coastlines they will visit on the way to Istanbul. ■

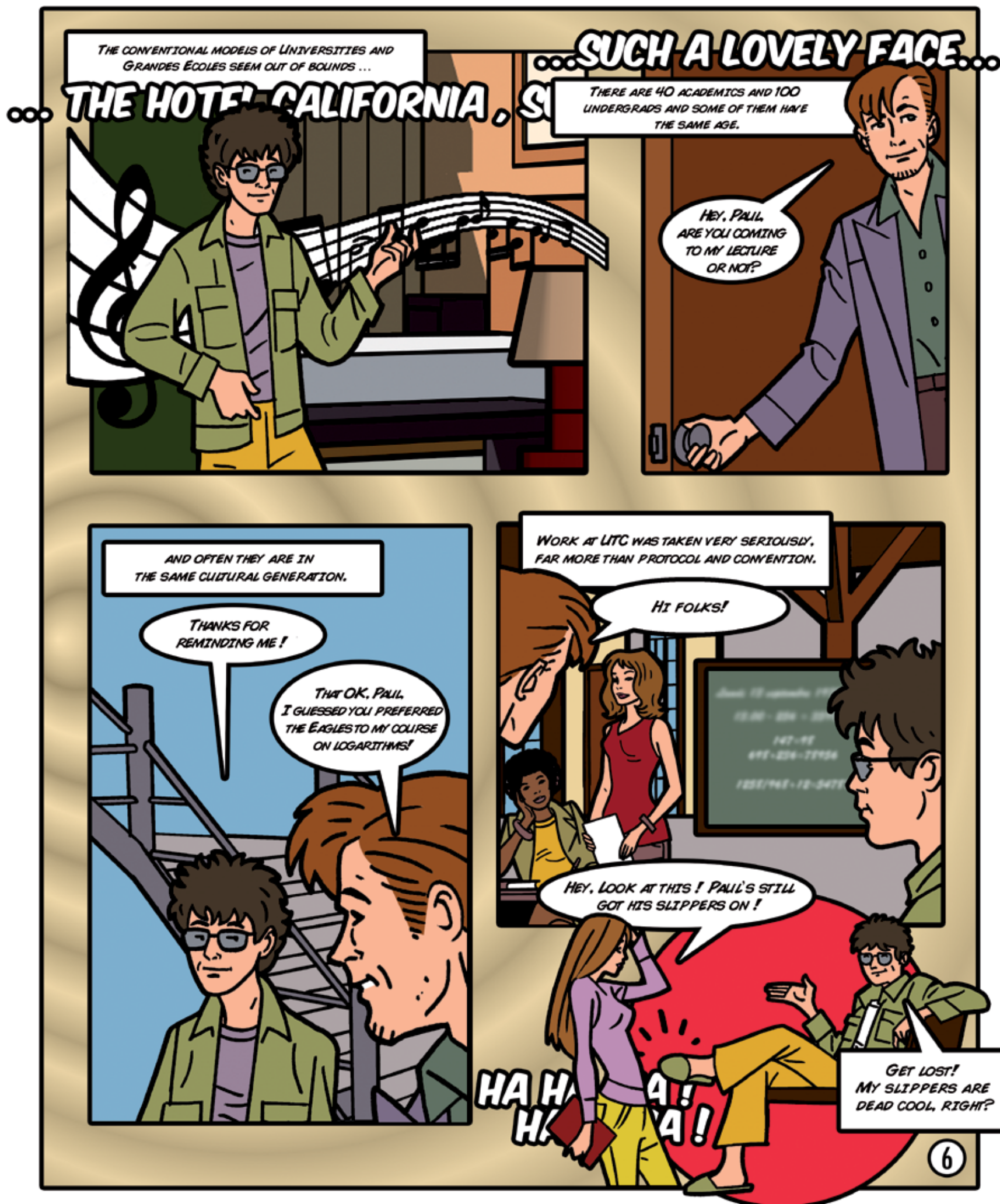
plus d'infos ► [www.marenostrum-project.com](http://www.marenostrum-project.com)



To mark its 40th anniversary, UTC-Compiègne tops the billboard : **"Somewhere in the future"**









# Gold-digger

Frank BOSSEL is Sales Director at Numergy, THE French 'cloud' company. Ever since he graduated from UTC-Compiègne with the elective speciality Computer Science, he has always been involved in cutting edge Internet companies.

**H**e left South France, where he was born, to study at Compiègne in 1981 following the recommendations of a friend who had been to UTC two years earlier. Frank discovered the autonomy, job demand, independence and 'responsibilisation' that he hoped for. "It was a very novel at the time", recalls our Frank, who, when at UTC, was President of the Students' Union, the same year that Philippe Laville sang at the UTC Gala. He carried out his internship at IBM and decided to move towards the sales side of engineering, which was closer to his personality and his career aspirations. In 1988, he joined Control Data, an American company pioneer in super-calculators, before leaving this niche to Sun Microsystems in 1990 (who were champions in 1995-2000. "The key-stone of my career is my curiosity for new technologies. Sun Microsystems invented a multitude of things, including Java, the programming language", adds Frank to illustrate matters. A position in sales allows him to conjugate writing skills and his innate curiosity. Just when the Internet bubble exploded, he move to Dell, where he was first mid-market Sales Manager before taking over their After Sales Consulting Service.

cloud computing; no need to worry about having equipment (servers) to safeguard and back-up data or share files. "We are infrastructure providers. The objective assigned to Numergy is to supply the digital resources needed by enterprises so that they can concentrate on their core job and benefit consequently from higher levels of competitiveness", sums up Frank BOSSEL.

## Why do we need a "cloud computing sovereign"?

"One of the challenges of a digital world is to offer French enterprises the possibility of storage via a French organisation. Today the French market-place is held by Amazon Web Services and the other majors in the field are all American: IBM, Google, Microsoft, etc. The only problem" notes Frank BOSSEL, "is the existence of the American 'Patriot act' that authorises the US government to access the data should litigation arise and if this should occur, the it is American law that applies. The recent Prism affair has increased our sensitivity vis-à-vis data security issues". In order to stay credible on this market place, the input barriers are high: you have to be able to offer guarantees and infrastructures in terms of data centre capacity, networking and computational power. However, the French market holds promises: it has an estimated value of 200 Meuros today and should grow by some 45% over the 5 coming years. "What we have is a sort of Eldorado and we really are at the beginning of a technological paradigm", says Frank enthusiastically, with his tightly knit 15 man team, all complementary to each other which shows 3 management trump cards: exemplarity, proximity and team spirit. Numergy, whose commercial activitie only began in 2013, should show a turnover of 400 Meuros by 2016.

The Frznrh cloud has 4 data centres, 2 000 clienst abd emplys 81 persons. The forecast is for 400 staff, 300 of which would be qualified engineers, by 2016 with a dozen or so data centres located in the Regions. "What I have found at Numergy is what I had known earlier at Sun Microsystems : tremendous emulation, creation of companies that have become super-stable 'monsters' in just a few years, like Google or Amazon. Today what we see is the development of cutting edge technologies and new start-ups every other day; some are already operating thanks to Numergy infrastructures; our ambition is to become a European leader." ■

## The 'cloud computing' revolution

In 2012, Frank was head-hunted to join Numergy, on of the entities created via the Government programme Andromède, May 2012, which gave France a 'cloud computing sovereign'. Numergy's capital (225 Meuros) is held for 33% by the banker Caisse des Dépôts, 47% by SFR (French phone operator) and 20% Bull (computer equipment). The concept of cloud computing was in fact invented by Amazon in 2006 who took the decision to marke (ie offer for rent) unused data storage capacity, firstly to private individuals then to business companies. A parallel can be drawn with electricity: no need to build a nuclear power station when you just want enough to light a few bulbs at home! Billing depends on the use made of the cloud facility (data stored), explains Frank BOSSEL. "Three other phenomena have accelerated matters: cost control, a growing concern for reactivity and flexibility with respect to digital solutions and a need for the users to find such advanced technology for private uses". These 3 forms of pressure have now modified trends of corporate data processing service; they now tend to turn to

## BIO EXPRESS

1981 - 1986: UTC-Compiègne, specialty elective Computer Science

1988 - 1990: joined Control Data

1990: Sun Microsystems, where he held several sales/marketing functions, among which Head of Development of Alternate Telecom Operators' markets, the Provider Services and Internet Technologies.

2004 - 2012: hired by DELL as their Sales Director. In turn he was appointed Director of Infrastructure Solutions and Director of Cloud Storage - France.

As of 2012: Frank BOSSEL joins Numergy as their Sales-Marketing Director.



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