NEW LAY-OUT

YOUR VIEW ON

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Interactions

INTERVIEW

PHILIPPE COURTIER
"Our Destiny lies with Sorbonne University Alliance"

PHOTOGRAPHIC COMPETITION

WITH HEPIC, SEE YOUR PERSONAL PHOTO **PAGE ONE OF NEXT ISSUE !**

DOSSIER

The UTC graduate engineers: *Humanists and technologists!*

FROM THE PRESIDENT'S DESK

Engineers in France were initially military men. To quote Voltaire "Marshal de Vauban, born in 1633, the greatest engineer this country has ever seen, who fortified according to his new style and concept some three hundred former strongholds and who built thirty three new fortresses". Earlier, in the 16th Century, Jacques Amyot [1513-93] had already written at text entitled "Mechanics or the Art of Engineers". Universities in France did not take on board mechanical crafts in the 17th and 18th Centuries, which knowledge and know-how were traditionally handed down through families of craftsmen or through craft corporations, but they were scheduled in the programmes taught at the École royale des ponts et chaussées (2nd half of the 17th Century) mainly by public, state or Corps Engineers and by the earliest class of graduates. The revolutionary Comité du salut public, at the firm instigation of the Lazare Carnot created the future Ecole polytechnique in 1794 with the vision that the Republic needed savants recruited on their personal merits. This marked a milestone, whereby student "French engineers" finally were able to acquire a solid, wide-ranging scientific culture, notably in mathematics, followed by a practical grounding in specific mechanical "arts" in their école d'application and where, indeed they learned the ropes of their first profession. At UTC, our Core Programme followed by a 'Major" specialty acquired in one of our five university departments followed suit to this heritage.
But if the Republic needs world-class, savant engineers, it also needs engineers capable of acting as intermediaries between satisfying current societal needs and seeking the solutions that mechanical "arts" can provide and likewise to be able to identify where the frontiers of knowledge ought to be pushed back to accelerate these solutions. If philosopher Pascal could draw a contrast between a professional and what he called an "honest man", we at UTC entertain the ambition to bring them closer, training what we see as humanist engineers. In this light, social sciences and humanities as taught at UTC, do not have a utilitarian aim but rather that of providing our future graduate engineers with the keys to better understand societal issues and to enable them to lend meaning to their personal lives and to their public actions. In this manner, we shall fulfil our main mission which consists of training engineers and furthering the development of research and technology.

President & Vice-Chancellor UTC

 # TOM LAPERCHE, A STUDENT AT UTC, HAS JUST BEEN AWARDED THE BRITANNY ESPOIR CREDIT MUTUEL CHALLENGE, after winning six out of nine races. Tom is now back in classroom at UIYTC till January after which he moves down to the Ocean Racing School to begin training for the Figaro Race. ■

 # GOLD MEDAL AT THE LAMBDA MU CONFERENCE FOR THE UTC-HEUDIASYC LAB. Subeer Rangra (former PhD student at Heudiasyc – IRT System X), Mohamed Sallak (lecturer at UTC-Heudiasyc), Walter Schön (professor at UTC-Heudiasyc) and Fabien Belmonte (Alstom) were awarded the Gold Medal in the category "Methods and Industry" at the Lambda Mu Conference, for their article entitled "Risk and safety analysis of mainline autonomous train operation: context challenges and solutions". The Lambda Mu Gold Medal is a specific reward for outstanding collaborative work between academics and industrialists. ■

INNOVATION

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Bing Bin, a bin that sorts your wastes

Maybe we shall see one installed next to each coffee-blender. Ah… and what is this 'Bing Bin' that recognizes your wastes and sorts them accordingly? It is a futurist, ecological project that won the French edition of this year's James Dyson Award (Sept.2018).

In the beginning, there was this CC entitled, "Initiation for the creation and management of innovative enterprises", followed by Tyngiun Du and Saad Lachhab, very keen on sustainable development questions. These two UTC students started out on an ambitious project: to revolutionize waste management by sorting and compressing them from the moment they are discarded and dropped in a bin. In September 2017, they won an 'innovative project' competition organized by the regional department DIDT (Innovation and Territorial Development), which enabled them to benefit from accompaniment via the DPIE (entrepreneurial aids for innovative projects). "The DIDT has, at its disposal, a wide-ranging set of aids to help student-entrepreneurs", explains Virginie Lamarche, herself an engineer in charge of this incentive entrepreneurial arrangement. "The aid can take the form of finance, co-working space assignments, access to the Fab'Lab, contacts and liaison with UTC laboratories … The students selected are accompanied from the early project stages up to and including point of sale introduction of their product(s)!"


TYNGIUN ET YUCHEN

In 2018 another student, Yuchen Qiu, joined the team who were readying themselves for the James Dyson Award competition, supported in this by the IDI specialty staff (industrial design engineering).

"In accompanying our students through this competition, we help them in fact to prepare themselves better for a future profession, given that calls to tender and competitions are part and parcel of any design engineer's work", explains Emmanuel Corbasson, head of IDI. And as has been the case since 2013, this Bing Bin project was ranked finalist, "because our students", underscores Emmanuel, "benefit from a specific accompaniment and because we teach them how to address user-cantered problems".

So what will happen now? Tyngiun has graduated from UTC and has returned to China. But she definitely does not wish to abandon the Bing Bin project. Following Saad's departure too, Julie Schwarz joined the team to pursue the development of Bing Bin, again with support from the DIDT. This is a great opportunity for her. "Since I joined the project, I have been in charge of product design aspects, with liaison work among colleagues here and all our external PR "comm" work … a rea challenge for me!"

The fact that Tyngiun is now back in China is not seen as problematic for her: « On the contrary, it turns out to be an advantage! The R&D aspects and market-studies are carried out in France, so my role will be to contact Chinese suppliers to make sure that the parts we buy here are of suitable quality. Working between France and China is never straightforward, but we are convinced that it will prove to be an advantage in the long term!" ■ **MB**

ENTREPRENEURSHIP AT UTC

- The competition for innovative projects (launched in 2010): 8 start-ups created
- 8 start-ups accompanied outwith then competition
- The European Innovation Academy: 4 projects ranked in the "top ten" over the past three year period the "Elite" entrepreneurship programme: 10-15 students each year, 7 start-ups created

HOW DOES THE BING BIN IT WORK?

1 The user discards waste item(s)

2 The Bing Bin photographs and identifies items: can, plastic bottle, goblet, etc. (organic wastes are not taken in to account)

3 Weighty sensors detect if any liquids remain (if so, the user must empty them into a special recipient).

4 The waste items are then compressed and dispatched to a compartment specific to the category of waste.

INTERVIEW

"Our destiny lies with: Sorbonne University Alliance"

Appointed Director of UTC, the University of Technology, Compiègne, in 2017, Dr Philippe Courtier truly seeks to see his institution progress in the framework of the HE cluster Sorbonne University Alliance and to widen the vista and scope of UTC students to the possibilities of the world of high-class research. To bolster this vision, the class return 2018-19 will see a series of Inaugural Lessons taking place on campus.

In a village called Melle, in the Deux-Sèvres department when, as the saying goes, Philippe Courtier was only knee-high to a grasshopper, he succumbed to the charms of science and technology. His Grand-Father as a creative and impassioned chemist. "He even gained his PhD without first getting his Baccalaureate and, indeed, was the first scientist in the family" and Philippe adding that, with him, he had been proud to learn the art of blowing glass recipients, etc., used in his Grand Dad's laboratory. At the age of 12 he helped his engineer Father, with oily hands-on, to repair the family car engine, after a crankshaft failure. Aged 13, he was into "special relativity", thanks to a book by George Gamow and that started him delving into and devouring all the books in the family library on this subject. Hence our surprise to hear him say how bored he had been at his Lycée Joseph Desfontaines, in Melle. However, the state of boredom was not to last long. He was admitted to the class of 78 and graduated from Ecole polytechnique; he chose the École nationale de la météorologie as his "école d'appli" because of his "acquired taste and propensity for science". It was at ENM in the course of his end-of-studies laboratory internship that he discovered the meaning and purpose of doing research. Consequently, he decided to do a PhD and he presented a thesis on application of optimal control theory to weather forecasting (at Météo-France, viz., the national weather centre and at the LMD (laboratory for dynamic meteorology studies-CNRS. His research was done with "computers not exceeding 128 kilobytes memory" but nonetheless allowed him to use his observations for weather forecasting and opened the door to the ECMWF (European Centre for Medium-Range Weather Forecasts (Reading, UK).

"It is the premier centre of its kind in the world, five years ahead of the USA in this particular field" , he explains. Philippe Courtier has authored numerous scientific papers, receiving a prize award from the French Academy of Science and one from the Royal Meteorological Society, and his career accelerated in grand manner thereafter.

PHILIPPE COURTIER, PRESIDENT & VICE-CHANCELLOR UTC

After a term of work with the CNES (France's national space agency) followed by time at the Laboratory for Dynamic and Climate-related Oceanography, in 1999 he was appointed, Deputy Director General for Météo-France at the age of 41. He stayed with Météo-France for 5 years and chaired the scientific committee of the World Weather Research Programme (WWRP), 2002 -2005. It was as of this point that his career shifted its heading, from research scientist institutional senior management positions.

Director of UTC

In 2017 at the age of 59, Philippe Courtier was appointed to the position of Director of UTC, a university which trains some 4 000 student engineers and 300 PhD students each year. Question - What are your vision and project for UTC within the HE cluster Sorbonne Universities? PC- "It is UTC that carries the project, not me. The role of the Director and his team of colleagues is to serve the institution and to ensure it progresses". The two key advantages for the engineering school, as he sees them, are primo that, although UTC is 'young', it enjoys a strong reputation for potential candidates' families. The Director underscores the fact that 90% of the students admitted earned a "Très Bien" ranking (>16/20) in the Baccalaureate. "In the space of 40 years, UTC has become a key player in Higher Education in France"; secondo, the UTC staff are all highly committee to their establishment. This is why Philippe Courtier refuses the notion of "his project" and prefers "the institutional project carried by the entire UTC community".

There is, however, one weak point in UTC, according to Phillipe Courtier, its size, both in terms of undergraduate student engineers and PhD student populations. "Other technology-intensive universities in Europe are at least twice as big"", he says. "Certainly, our objective cannot be just to grow for growing's sake, but we should aim at covering a wider range of engineering fields, to be comparable to other European universities". Question – what might his growth ambition be? Philippe Courtier sees this taking place in specialties where currently UTC is not too present – "water, energy, environment, industrial engineering and digital systems". … and in terms of greater European and world-scale 'visibility'? He see this happening within the framework of the Sorbonne Universities HE cluster. "Our destiny lies with Sorbonne Universities", Dr Courtier forcibly repeats the credo. … and why believe in this? The first reason is the undoubted world image of the Sorbonne itself. Then second reason is tied to the size of "the University of Paris 6 (Pierre & Marie Curie) with its Faculty of Science and Engineering and its Faculty of Medicine, making it the largest science-oriented university in Europe and in the "top 100" in the world-class rating", details Philippe Courtier. Hence his desire to contribute to "the development, of the technology-intensive pole of Sorbonne Universities, the excellence of which was confirmed in 2018 by an international jury of experts".

The Inaugural Lessons

In launching the series of Inaugural Lessons, as of year back 2018-19, UTC has the intention to create "a first positive encounter between students and science, between students and high level research". The first lecture will be delivered by François Forget on the theme 'Exploring the Solar system to understand the Earth better'; the second lecture will be: "Common and digital assets", by Benjamin Coriat, economist; and, last but not least, in this initial series of 3 lectures "A Primer in Automatic Learning Processes will be given by Thierry Denoeux, UTC-GI computer science departmental professor and research scientist at the UTC-Heudiasyc Lab.. ■ **MSD**

THE 3 INAUGURAL LESSONS

"Exploring the Solar system to understand the Earth better" by François Forget, Research Director CNRS – at the Laboratory for Dynamic Meteorological Studies (LMD)

"Common and digital assets" by Benjamin Coriat, economist

"A Primer in Automatic Learning Processes" by Thierry Denoeux, UTC-GI computer science departmental professor and research scientist at the UTC-Heudiasyc Lab.

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STUDENTS' FOODSTUFF INNOVATION PROJECTS WIN AWARDS TWICE

Having previously won the final round, June 18, 2018, in the Ecotrophélia France competition, six UTC undergraduates also won the Jury's "soft spot" prize for the most innovative project, with their HUSH project (Heat-Up Shake Health), viz., a fruit-based lactose-free hot drink. This was the first time an engineering school won a Prize at Ecotrophélia (the benchmark competition in foodstuff innovation and at their first try as competitors. Justine Patin, Baptiste Pontreau, Camille Paul, Cornélia Garaudel, Mélanie Abhervé Gueguen and Aurane Lherbier enjoyed the accompaniment offered by Claire Rossi, Head of the specialty « Innovation, Foodstuffs and Agro-Resources » and by Nathalie Darène, lecturer-cum research scientist for "Innovation marketing" at UTC. ■

UTC RANKING IN THE TIMES HIGHER EDUCATION 2019 LIST

This prestigious THE ranking placed UTC between 601st and 800th position, in the general list. UTC also comes in as 5th French HE establishment for its "international outlook" and 11th in the category "Industry income". ■

CREATION OF A BRAIN-STORMING GROUP ON INNOVATION

At the instigation of the DIDT (regional directorate for innovation and territorial development), a group of Research and Innovation (R&I) and/or Development (R&D) Directors (Saur, Colas, DDPO, Federal Mogul Motorparts, Electrolux, Ubisoft, Systra ...) got together at UTC's Daniel Thomas Innovation Centre in October 2018 to exchange about how the corporate world can take the theme of social progress into its stride as a variable factor in innovation processes. Also participating was Prof. Yann Moulier-Boutang (UTC), who offered his own reflections and analyses during the creative brainstorming sessions developed by Ubikey (a UTC start-up). ■

ALI CHARARA, NEW DIRECTOR OF INS2I

Professor Ali Charara, UTC has been appointed Director of the Institut des sciences de l'information et de leurs interactions (INS2I), taking office as of January 1st 2019. ■

THE "BASF FUTURE DIRECTIONS PRIZE" AWARD FOR A UTC-TIMR PH.D STUDENT

Zahra Afrassiabian, a PhD student preparing her thesis at the UTC-TIMR Lab (integrated transformation of renewable matter), was awarded this prize at the CHoPS2018 (9th International conference on Conveying and Handling of Particulate Solids). Her research focuses on problems arising through powder clotting. Her work comes under the MOTTAMORPH project co-funded by the FEDER (EU) and the Hauts-de-France Regional authorities (ex-Picardie). ■ **PS**

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ACOUSTIC DESIGN

When engineers listen in...

WHY USE 'ACOUSTIC' RATHER THAN 'SOUND' DESIGN ?

The term "acoustic" refers to the physical mechanism that underpins production of a sound, contrary to "sound design" which is the subject matter of courses taught in art schools. Student engineers are therefore more sensitive to the way sounds are produced and, moreover, they include marketing, creation of sound logos, etc.

The 'gling-gling' of a microwave oven, the 'click-click' of a car's direction indicator, the SNCF railway station announcement jingles … **we are all familiar with sounds like these that we hear every day**, but maybe you did not know that they probably were 'worked on' by sound designers. In order to meet a growing demand for specialist engineers in this fields, a new CC has been programmed at UTC: Acoustic design engineering.

This new CC is the result of two mechanical engineering department specialties coming together: Industrial Design Engineering (IDI) and Acoustics and Vibration for Engineers (AVI). As Nicolas Dauchez and Christophe Harbonnier - who co-head the CC - see the issue: "Sound design has only been touched on so far in engineering schools, while we note the very strong demand for expertise in numerous areas such as transportation, urban planning, multimedia, communications… Our objective with his new CC is to see our students become more aware of sounds produced by technological objects and to teach them how to analyse user-experience in this domain."
The CC is a combination of lectures on how we perceive sounds, how musical instruments and the human voice 'work', along with sessions devoted to listening, analysing, creating sounds that can be synthetic (electronic or digitized), in, order to better understand the underlying structures.

Several professional guest lecturers came in to share their personal eXperience throughout the semester. The students were also engaged in case studies, typically, e.g., "Imagine you are a sound design engineer in a company that has decided to bring out a new product with a controlled sound quality output. You are required to study the competition in the market-place and to prepare a sound test for the staff of your company to jusge which product is best appreciated by them". During the semester, the students also have to create a sound track for a video and to create synthetic sounds for the user interface. ■ **MB**

DEFINITION !

A sound may be produced by a physical mechanism or by diffusion of a 'worked sound'. Both can co-inhabit, naturally. For example, certain hybrid vehicles are equipped with a system that allows a sound continuity between the sound produced by the internal combustion and the electric propulsion unit.

Sound design contributes to valorising the sound an object produces, clarifies our comprehension of this sound and the meaning attributed to a vocal message or a signal with a precise function.

THE ROLE OF AN ACOUSTIC DESIGNER IS TO STUDY

The interaction of materials and shapes in a mechanical system that produces sounds.

Acoustic designers make and analyse measurements to determine the perceived characteristics and also the sound experience for the user/listener.

They contribute to research into mechanical (and/or digital solutions to be used to attenuate/ abate nose (unpleasant sounds).

Their aim is to see sound contribute to the overall quality desired (production of sounds perceived as pleasant or compliant) in coherence with a function and/or user desiderata.

They can also help create/design/shape sounds used to guide users, warn of a danger, and/or confirm an action, the sound being heard explicitly in this context by the user/listener.

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The UTC graduate engineers: Humanists and technologists!

What makes UTC graduates so special? They have successfully completed the general engineering courses and have all chosen a "major" specialization, as of their 3rd academic year of studies. Up to that point, their curriculum was, in most respects, quite "traditional". But the little extra flavour in their training probably lies in the important role of social sciences and humanities at UTC. With its specific Department and research laboratory devoted to social sciences, the University intends to train engineers with a difference...

"At UTC, our pedagogical intention is not to turn out rough-shod technologists but rather humanist-oriented technologists capable of thinking through technology-intensive problems and situations including the environmental, social and societal consequences, constantly keeping innovation in their sights", wrote Etienne Arnoult, UTC's Director for Training and Pedagogy, in the columns of the publication Eduniversel ranking the French engineering "grandes écoles". And indeed, UTC emphasizes and encourages the student-engineers to register for social studies and humanities early in the cursus programme.

In order to fully understand the important role assigned to social sciences and humanities at UTC, our readers must go back in time to 1972, the year this engineering school was founded by Guy Deniélou, and its first President, who signed - in the columns of the Revue de l'information de l'Oise – an article we can readily view as a manifesto for the UTC project. "We shall endeavour to end once and for all the absurd cleavage between the humanities and science. […] Everybody in charge of designing, building, operating maintaining and repairing equipment know how much their activities depend on human interpersonal relationships, […] and the time is nigh when it will no longer be possible to pretend that we know someone without knowing the things he makes. […]. In the light of this, it is my feeling that a new approach to humanities becomes possible from a technological standpoint and we would like to implement this experiment".

We can note that from the outset, UTC offered courses in philosophy, in marketing … In 1986, the Department UTC-THS (Technology and Social Sciences) was set up for the purpose of better organizing the university's programme offer in social sciences. A little later, in 1993, UTC founded the Costech Laboratory where we find several dozen lecturer-cum-research scientists and PhD students all specialist in social sciences and humanities.

Today we see that with over one hundred courses in areas such as: epistemology, philosophy of engineering, language and communication studies, the social sciences represent à major fraction of the curriculum proposed to future UTC graduates. Indeed, these courses, more than just being introductions or primers or general culture-oriented, taken together, account for one quarter of the lecture hours followed by the student-

engineers. "Our aim", says Nathalie Darène, Director of UTC-THS (cf. interview page 6)," is to train future engineers to take into account, on a day-to-day basis, all the socio-technical challenges and issues and the technology-intensive systems on which they can exert their talents".
This project, viz., to train humanist technologists, saw its hey-day in 20123 when the university authorities launched a new "Hutech" curriculum (Humanities and Technology). The programme is open to candidates with a French Baccalaureate, S, ES or L and proposes a three year alternative to the classic UTC core programme, with some 50% scientific and technological courses and 50% social sciences and humanities in the first year at UTC. "Our wish and objective is to train engineers capable of modelling these social challenges and issues on the same level as they do for scientific and technological questions, even before the technological projects come to be: we are no longer in a position to reason in terms of consequences (remedial), we must also reason "meaningful for Humanity", "societal projects", details Nicolas Salzmann, head of the Hutech programme (cf. interview page 7 and the photo-report, page 8).
It turned out to be a "winner" for the first UTC classes graduating under the Hutech scheme. "By spot lighting the THS option, UTC is already turning out engineers who integrate and give thought to the Intercations between Mankind and Technologies", adds France, one of the recent Hutech graduates. "Hutech takes us further, exposes us to concepts and notions that later will become real tools to enable us to think of this Mankind/technology relationship in en entrepreneurial framework or in the products/service sectors (Cf. graduate statements, page 9). ■

« After Hutech, I continued in ***Computer sciences and their Applications*** *(GI) »*

Admitted to Hutech : **2013**

Current position : **PhD student** at the UTC-Heudiasyc Lab. and at the ISIR, University of Paris 6 (Pierre & Marie Curie, Paris).

How he sees it : "Through what I learned in philosophy (in particular the philosophy of technologies), social and cognition sciences, I was able to develop in Hutech, my mind opened to discover numerous prospective fields for my research. Now I can envisage paths that do not usually cross the thoughts of mainly scientifically and technologically trained engineers. I can now step back a bit when it comes to assessing the value of what we produce, in general terms, for Society, for end users, etc."

"We want to train engineers who can reason in terms of ***the socio-technical challenges surrounding their projects"***

With over one hundred courses on offer, the UTC-THS Department (**Technology, Social Sciences and Humanities**) is open to all UTC students: from the Core Programme to the PhD students, the five majors, to the Master's degrees – notably in THS and its specialty UxD (User Experience Design) and the Continuing Education programme (all told, some 2450 students each semester). It is the sheer diversity of the subjects taught that makes UTC engineering training so specific. Nathalie Darène, Director of UTC-TSH explains …


NATHALIE DARÈNE

ZOOMING IN ON THE UTC-COSTECH LAB.

Among the UTC research laboratories and an offspring of the Technology and Social Sciences Department, the Costech Lab focuses on the relationships between Mankind, Society and Technology. There are three research Groups at UTC-Costech: the CRED (cognitive research and enactive design) which explores and analyses the technology-intensive components of human experience. The CRI group (complexities, networks and innovation) examines the changeover from an industry-based economy to our cognition, knowledge-based modern capitalism. Lastly, we have the EPIN group (digital writing, practice and interactions) which looks critically at new political, educational, cultural and in writing itself, based on digital techniques and technology.

"The first thing that struck me when I consulted the UTC course catalogue, was the significantly high number of social science modules on offer", remarks Alexander, even today, three years after arriving at UTC. Indeed it is noteworthy that students have no end of possible course choices, running from marketing, to economics, to improving language skills, to public speaking or epistemology. "Certain course descriptors may appear somewhat strange to our students", adds Nathalie Darène, Head of the UTC-TSH Department. "I should add that our course offer is rather unique, since we rely largely on input from an academic research laboratory." Our UTC-THS Department was founded in 1986, and combines a set of social science and humanities courses at UTC. Most of the lecturers are also research scientists at the UTC-Costech laboratory, whose objectives consist of analysing the relationships that exist between Mankind, Society and Technology.

"Notwithstanding", details Nathalie Darène, "these social science, humanities-oriented courses must be not be viewed as bolt-on additions, but rather as integral components of the university's overall pedagogical scheme. Our aim in proposing these courses is to have the students become more aware of the socio-technological issues that they will encounter in their professional activities. Engineers must not be limited to just designing products and technology-intensive services, but they must envisage the consequences of their work on Mankind and on Society at large".

Engineers must not be limited to just designing products and technology-intensive services, but they must envisage the consequences of their work on Mankind and on Society at large.

Consequently – ever since it was created – the UTC-THS Department operates in close collaboration with the other engineering science departments at

the university and with the partners in the socio-professional world. Nathalie Darène pursues "With the lecturer-cum-research scientists of the THS Department, we are highly committed to field trips, exploring and adapting the contents of our courses to the real issues facing engineers in entrepreneurial milieus. Our objective in doing so is that as soon as our students come to grips with a project, they think through and analyse the underlying socio-technological problems and questions". From major industrial groups to SMEs, there are a great many actors who taken part in and contribute to the THS courses. In order to see the training offer better scale to needs, Nathalie Darène and her colleagues have launched a prospective and strategic analysis of how and where THS Department stands. "Although our offer in social sciences and humanities meets the current needs of the market-place, we do want to think about the future of these subjects over the coming years". Via a number of field tests, polls and enquiries, the research scientists-cum lecturers have set an objective for their department, viz., to prepare their students to handle new knowledge and to cooperate in digital and intercultural exchanges and milieus.

"The aforementioned maxim summarizes all the aims we entertain today: cooperation refers to project co-construction that can exist among students", analyses Nathalie Darène. "Engineers professionally never work alone, isolated, locked away in ivory towers …The notion "milieu" reflects the full context in which we bathe, part and parcel of any project. By "digital", we represent new tools and new ways to tackle problems. And lastly, "intercultural" is to be construed in its wider connotation, in both the international register but also in regard to cultural interfaces and links that exist between SMEs and major groups, etc. As an accompaniment for this overarching aim, we must rethink the way social sciences and humanities are taught at UTC, e.g., enabling the emergence of advanced programme items that specifically address volunteer students, notably an offer to carry out mini research projects during their internships. This represents is a sizeable challenge for our student engineers".

At the end of the day, what is the real impact of this social sciences and humanities policy thrust? "What the employer-companies tell us regularly is that our UTC graduates demonstrate a fine capacity to adapt and to adopt positive problem solving skills and attitudes," details the Head of UTC-THS. "We indeed encourage these through our course offer and are proud that our graduates reflect and are recognized for these features"■

PAULINE

« After Hutech, I continued in ***urban system engineering*** *(GSU)»*

Admitted to Hutech: **2012**

Current position : **Transport planning engineer** with TTK in Germany.

How she sees it: "Through Hutech I built up my professional and also my personal profiles. I was led to develop my sense of critical analysis and synthesis. Nonetheless, I did not feel I was an engineer that much different from others. All around, I see some very varied profiles and we all can contribute something singular and special to our work".

Interview - Nicolas Salzmann,

Head of the Humanities and Technology Programme (Hutech)

Hutech is a sort of 'UFO' in the 'eco-system' of engineering school programmes in France. It is a three-year programme open to candidates with one of the Baccalaureates S, ES or L with a first year composed by 50% scientific and technology-intensive courses and 50% social science and humanities. **The buzz-word" Hutech" is now used by aficionados at UTC for the Humanities and Technology Programme**. Nicolas Salzmann, a research scientist-cum lecturer at UTC heads this programme. This special training course for future engineer-technologists merits a closer examination and some explications.

In the space of seven academic years, the UTC Hutech Programme has trained and qualified over 170 students. The class of 2017 (admitted in 2012) received their diplomas last December. For three years, just like the other student engineers at UTC, the Hutech programme students were 'bottle-fed' on Maths, Physics, Computer Sciences and their Applications, Chemistry, Biology and Urban Planning. But the major and original feature of this programme is the stress laid on epistemology, the history and philosophy of sciences and a technology. This is a mix that the students find enjoyable. As Pablo, a first year student, puts it "I was equally excellent in scientific subjects as in literature. I didn't want to abandon either side of my pervious learning curve, so it appeared to me that Hutech was the 'perfect' compromise". Following the three years Hutech course, the students can then choose to pursue a major at UTC (which most of them do in fact), or move to another HE institution or simply graduate, leave and start a professional career, with their Hutech diploma.

NICOLAS SALZMANN

Nicolas Salzmann, research scientist-cum lecturer at UTC for some 20 years now, was the founder of the Hutech programme. "I see Hutech as a project

« After Hutech, I registered for a ***Master's degree in UX Design*** *»*

Admitted to Hutech : **2013**

Current position : **UX/UI designer** with Thales.

How she sees it : "Studying the relationships between Mankind and Technology, including the historic, philosophical, sociological, cultural aspects predisposed me to a large extent to adopt a sense that is necessary in the position I hold. We should never forget the finality of Technology, viz., to satisfy needs we express as human beings. Strangely enough, we can note that this is not self-evident in major corporate projects. By stressing the importance of Technology, Social Sciences and Humanities, UTC trains future engineers to become aware and sensitive to these issues. Hutech goes beyond this, examining and assessing concepts and notions that will later become real tools to think through the relationships of Mankind with Technologies in Enterprise and in the Products/Services that the companies propose on the market-place".

> *In the Hutech programme, we train technologists, as a sort of go-between mediators capable of making technical projects 'dialogue' with societal issues, they must understand technical matters, think correctly about them and express themselves precisely on these topics*

that continues the philosophy behind French universities of technology, viz., training engineers capable of thinking through technical challenges whilst integrating the relationships that exist between Mankind and Technology. The objective we set for Hutech is that our graduates be capable of analysing correctly these social and human aspects before seeking solutions to technology-intensive questions they will encounter in their future entrepreneurial milieus." In order to satisfy this ambitious objective, the programme creates a synergy between social sciences, humanities and engineering sciences. "We have set up a three year core programme, instead of the two standard years for this and the students do less hard sciences and more social sciences, " adds Nicolas Saltzman. "The consequence is that our students determine at an earlier stage the job sector in which they would like to work, later and can prioritize the programme courses they choose to build their personal Hutech training programme".

From the industrialists' point of view, Hutech graduates interest them. "Some companies send in internship offers that they have set aside, i.e., ear-marked specifically for Hutech students, adds Nicolas Saltzman proudly. "Either because they have heard about us or maybe they have already experienced having Hutech students doing placements with them". Elizaveta Izvolensky, who graduated in December (class of 2018) and works today in the transport sector, fully agrees. She has a profile that has helped her evolve to a position at the crossroads of technical and HR issues. She explains – My assignments address some highly technical projects such as development of dynamic regulatory speed adjustment systems for motorways, and in parallel some more prior, upstream analysis, pre-project thinking". As she sees it, Hutech provided her with numerous skills she puts to use on a day-to-day basis. "The Hutech programme really forged the way I think, the way I address subjects and I try to feel the sense of the issues and have a global overview even if I work more often on a micro-scale, analysing projects details. All of this has enabled me to face u to political, ecological and economic realities on top of the budgetary, financial and technological constraints. Hutech serves me well as a primer, right from the very start of the courses".

As Nicolas Salzmann sees it, the engineers who have graduated from the Hutech programme, over and above being humanists, are real technologists. "Inasmuch as engineers design goods and services that change our human life-styles, they must of necessity be humanists, constantly reflecting on the Interactions of Mankind, Society and Technology. In the Hutech programme, we train technologists, as a sort of go-between mediators capable of making technical projects 'dialogue' with societal issues, they must understand technical matters, think correctly about them and express themselves precisely on these topics". For the time being, the Hutech Programme advances successfully. In the corridors of UTC, we can detect the possibility that the current matriculation capacity for the course, limited today to about 20 per class, might increase over coming years.... ■

CODE-NAME : SUSHI

As an extension of Hutech and over several years now, Nicolas Salzmann has been working, with colleague research scientist-cum lecturers, on a project to transform concepts borrowed from social sciences into operational memento-cards for use in entrepreneurial milieus. Code-name-SUSHI "This really is an R&D oriented project," explains Director Saltzman. "For example, we often hear of the concept of inertia in the history of technology, the idea being that there are forces at play that resist changes we would like to introduce. It is a concept that has led to tremendous theoretical descriptions and what we did was to transform these into a set of tools that can be used by engineers to identify all possible sources of inertia that tend to block one their personal projects".

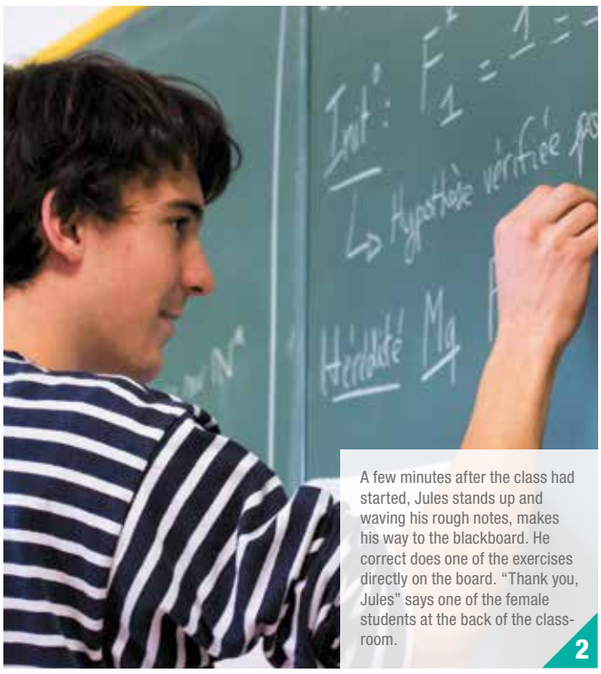
PIERRE KIDZIÉ, A HUMANIST - TECHNOLOGIST - STUDENT - ENGINEER !

Pierre Keddie is in his 2nd year of the Hutech programme. He is an 'engaged' student who wants to see his engineering skills serve Society at large. "All the debates we hear about climate changes and associate crises made me sit up and think. I decided I needed to get involved and try to change things on my own scale." While at UTC, he signed up as member of an association Compiègne-en-Transition" and he is now their President. This association was founded by one of the earlier Hutech classes, to promote local initiatives whereby everyone can help change things. Sharing compost/manure, organizing forest outings to collect discarded rubbish, participating in school activities … there are numerous projects for the association. Pierre appreciates that UTC pedagogy accompanies his efforts for many of the projects. "I think we enjoy a great opportunity here to see such a degree of synergy between social sciences and engineering sciences", adds Pierre. "We future engineers must be in a position to question our role and our activities in Society, and I really believe this must include studies in social science and humanities".

A day
with first-year Hutech students

The best way to assess the Hutech programme from the inside is to enjoy a real classroom immersion with some first-year students. On the menu this Thursday, **a lesson in maths and a history lesson about technology**.

In maths, Hutech uses reverse class pedagogy. The students first work on a set of exercise-problems, supervised by their lecturer Vincent Robin. “The aim of this maths class I propose is to train the students to handle abstract thinking processes and to discover the concepts and tools need in mathematical reasoning”. Pablo enjoys this approach. “The class-sessions are very interesting and allow us to progress enormously”. **1**

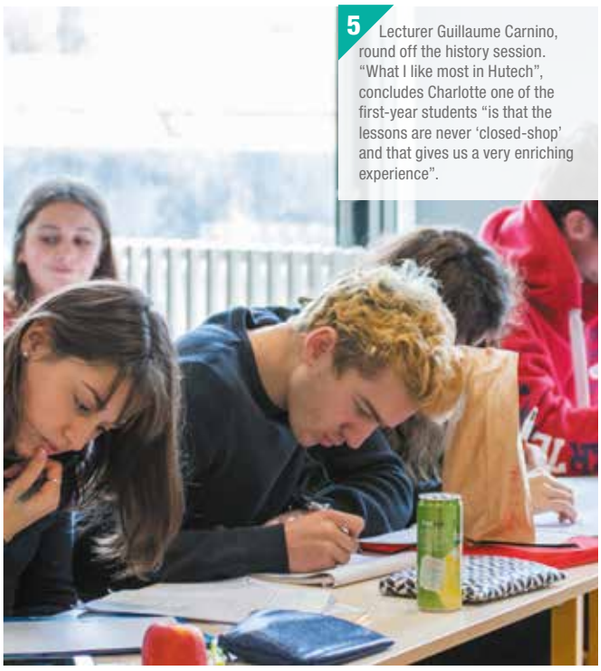


A few minutes after the class had started, Jules stands up and waving his rough notes, makes his way to the blackboard. He correct does one of the exercises directly on the board. “Thank you, Jules” says one of the female students at the back of the class-room. **2**

Same goes for the History lesson. The session begins with a reading of the minutes of last lesion, drafted by two of the Hutech students. **3**

4 The session continues round some historic documents covering the period of the Luddites.

5 Lecturer Guillaume Carnino, round off the history session. “What I like most in Hutech”, concludes Charlotte one of the first-year students “is that the lessons are never ‘closed-shop’ and that gives us a very enriching experience”.



Dossier drafted-edited by Guillaume Ouattara
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BIP POP / START UP

MATHIEU RIBEIL - ANNE GUÉNAND

Bip Pop a platform that helps citizens, associations and local authorities

Bip Pop is a **service-intensive platform that targets local authorities** who wish to widen the scope of their social services offer to help alleviate and remedy isolation factors. Interactions went out to meet some happy Bips and Pops!

Two years ago, Philippe Angrand, a ripe old 84 despite having to use a walking stick needed some help to make him walk a bit more. This former armed forces man called in and just one Bip later, a Pop (a co-opted local volunteer) by the name of Lucile turned up, or should we say 'popped up', in a flash? The mission assigned to Bip-Pop is to help strengthen the social contact with and for persons who gradually lose their autonomy. "I've been living in Compiegne for 47 year now; I have 4 daughters and 4 grand-children, all of whom have excellent jobs. For my day-to-day needs, I have Lucile and also Fabrice with whom I can get as far as the local "bistro" to enjoy a coffee. I think this idea of having people meet and help others is both very astute and very useful. Rather than walk alone, which means in the long run not walking at all, now I know I have someone who can help me beat my lazy inclinations", says Philippe. "We chat about everything that crosses our minds and I get her to talk to me about her family. Sometimes too, she helps me use my computer more efficiently".

"For the past year, I have been lucky enough to look after Jacques, 93 years old. He loves when I read books out loud for him"
Marie-Ange Pautet, généreuse Pop

Social innovation

Courtesy visits, reading out loud sessions, help with computers, dealing with 'admin' papers, company for walks, shopping, attending events and even generation exchanging advice … if I need help, I call Bip Pop and they answer immediately, which is possible via the Internet and mobile "apps". What we have is a transposition to satisfy purely social needs. The aim is to popularize local help services. Hence the "Pop" as in "Popularise". Anne Guénan – lecturer-cum research scientist at UTCV Costech lab, whose idea it was initially to create this social and solidarity-driven innovation – explains, "Bip Pop is the result of several years' development of research in a partnership venture between UTC and the Godin Institute. The Bip Pop platform will be being implemented throughout the Region Hauts-de–France in 2019-20".

PHILIPPE ET LUCILE

AND THE WINNER IS...

The 2016 laureate of the Ashoka Impact programme, of the inclusive mobility laboratory, laureate in both 2017 and 2018 at the "Financeurs de l'Oise" conference and also the Region Hauts-de-France

Proximity & sociability

Bip Pop has the status of a social and solidarity-driven company (of collective interest). It has partnerships with local authorities, with the various MDS, RPA, EHPAD, CAS, CCAS, CSR that all aim at serving the needs of isolated persons. "What is worrying today in France is that we have 1.2 M senior citizens who are isolated and this figure is rising all the time. Thanks to this mechanism whereby we can bring together people expressing a need and services that offer help, Bip Pop helps these seniors continue to stay in at home, with access to what we call the "final mile" and proximity services", adds Mathieu Ribeil, director for development of Bip Pop. An ESUS certification, for social and solidarity-driven company (of collective interest) is just round the corner ! ■ **KD**

www.bippop.com

INTERNATIONAL

UTseuS : « une expérience hors norme »

YUAN - TUYU - JIALU

End October 2018, Professor Jin Donghan, President of Shanghai University, China came to UTC, Compiegne to launch a new Master's degree programme, certified in both France and China. This visit offered an opportunity to reinforce UTSEUS which was established in 2005, in the framework of a Sino-French University Co-operation Agreement.

UTSEUS is a Sino-French engineering school, a partnership; that has been built up over a decade now. It was imagined and implemented jointly by the Group of French Universities of Technology and Shanghai University, China and, above all other considerations, is a unique pioneering venture in training and research. The Sino-European School of Technology of Shanghai University (UTSEUS) trains over 1 200 Chinese, French and other European students each year in a multi-cultural, international framework. Yuan Zhuang, aged 22 is one of the UTSEUS students, in her 4th year of the Mechanical Engineering major. "I found it quite easy to integrate studies in the French language given that we had had a good prior grounding in French. My early days at UTC have gone well. I'm currently doing an internship with the company Faurécia, Méru. Once I graduate, I plan to stay in France and find a job in the Paris area", says future engineer Yuan. Incidentally, with some other students in the Industrial Design (IDI) specialty, she and the group have just won a James Dyson Award 2018 for their project to create a smart so-


VISITE D'UNE DÉLÉGATION DE L'UNIVERSITÉ DE TECHNOLOGIE SINO-EUROPÉENNE DE L'UNIVERSITÉ DE SHANGHAI (UTSEUS) À L'UTC

called "Bing Bin". This way the students themselves become famous ambassadors for international co-operation schemes such as UTSEUS. The research themes common to the French and Chinese establishments are numerous: in urban planning, for smart transportation, for sustainable development … projects. These can be seen in an even wider connotation, tomorrow's cities and urban planning which is addresses in ComplexCity, the first lab in the world devoted to smart cities, bringing together Chinese and European scientists. "Not only must we widen the scope of collaboration for this programme, but we must above all take the research work to more advanced levels", notes Philippe Courtier, President and Vice-Chancellor of UTC. "We must value-add to our know-how to assist more than ever before major French companies round the world".

A strong partnership with mutual benefits

UTC with its 250 Chinese nationals registered for year 2018, strengthen its position in terms of resolutely being an internationally outreaching establishment. Some 60% of the Chinese students, after 3 years in Shanghai, register in France for the engineering diploma or a Master's degree. Of these students 52% obtain a French engineer's diploma and 8% a UT Master's degree. All the Chinese students here qualify for the Bachelor's degree awarded by Shanghai University. In reverse, some 140 students from European universities of technology went to Shanghai for academic year 2017-18. As Tuya Zheng, 25 years old and future graduate in bio-engineering says, "UTC is a highly international school. I was able, for instance, to do my first internship in Berlin, Germany. I discovered, in doing so, the sheer beauty of research work. Of course, basic research is not exactly what engineers are trained for but I was able to discover other cultures. Perhaps my personal professional future will lie in Shanghai." The UTYSEUS framework enables the students to enjoy all sorts of mobility, training the Chinese engineers how to comply with and satisfy the needs of French companies who wish to export goods and/or services to China and to training their French counterparts how to work on the Chinese labour market, while continuing to acquire new work methods and add a strong international flavour to their career. As President Jin sees it, UTSEUS is a fertile field for sharing skills, summarizing "These students will enjoy a truly outstanding experience based on the development of strong intercultural assets". ■ **KD**

UTSEUS SUMMER OUTINGS – COMBINING THE USEFUL AND THE PLEASURABLE FACETS

Last summer, in July 2018, 40 Chinese students benefitted from a field trip combining French culture and visits to some major company sites in the region Picardy. This was a "first" success for the UTSEUS network of universities and the organizers have already set their plans to repeat the performance next year, doubling up the number of participants from UTC (Compiegne), UTT(Troyes) and UTBM (Belfort-Montbeliard). "We attach numerous objectives to these outings" , says Baoxia Chen, in charge of foreign student mobility, "We want to motivate the students, improve significantly their levels and skills in French and have them discover the cultural treasures of this beautiful country". The visitors met the managers and work teams at Poclain Hydraulics, in Verberie, a world leader in hydrostatic power transmission systems, plus the AGCO tractor assembly units, in Beauvais.

RESEARCH

A sustainable forum for scientists and industrialists

The first phase of Mocopée - a programme launched in 2014 with over twenty research teams and industrial partners participating - ended in 2017. The second phase, running from 2018-22 is now underway. A conference December 4, 2018 will present summary results for the first four years and will identify the research priorities for coming years.

It was in 2014 that the Mocopée programme-acronym in French for Modelling, Control and Optimisation of Water Purification Processes" - was launched via a group agreement between Siaap, UTC and IRSTEA*. What is the aim? Well, the idea aim to create a work space providing a sustainable forum for exchange among scientist – note that over 20 research teams (from academic establishments and national research centres) have been mobilized, plus operators for water supplies and industrialists involved in urban water processing.

In the course of the first phase, no less than 8 PhD theses launched were completed or are close to completion, to the point that we can clearly claim the experience was successful. On this scale, the Mocopée programme is unique, both in terms of the number of academic and industrial partners and by the objectives, scope and time assigned. The programme has enabled significant progress as to the building of methodology-related tools (no-break metrology and matrix characterization) and in mathematics (signal processing, water treatment modelling and control & command protocols) as needed in order to enhance the level of mastery and optimization of water and sludge treatment specialist work. In addition the programme has brought some operational innovations


ANDRÉ PAUSS

To illustrate we can cite the design of a tool to measure water nitrite contents, which resulted from a collaboration between research scientists based at UTC-TIMR and Ecole polytechnique, recalling that nitrite content is set by s French standard [NF EN 26777 May 1993]. "In this research, the colleagues were polyvalent but UTC was assigned more specifically to the question of the sensors and to the algorithms needed whereas Polytechnique focused on control & command," underlines André Pauss, lecturer-cum research scientist who the prime UTC coordinator for the programme.

Phase II of the Mocopée programme, running from 2018-22, covers four research fields: building of innovative methodology-related tools (no-break metrology and matrix characterization), modelling of water and sludge control treatment protocols, integrity of transportation systems, treatment of waste water and several innovative concepts (upstream research and matter valorisation of matter).

Let us examine the first two research fields above. We know that in pursuance of more stringent relations for treatment of waste waters over the past two decades, the site operators have had to equip the treatment factories with some efficient technology, e.g., physico-chemical layered decantation; bio-filters, membrane bio-reactors, etc. But implementing technologies like these requires a high level of technico-scientific know-how. Questions that relate to metrology and/or to the control & command of the treatment protocols, for instance, today are to be found at the heart of a set of industrial problems. A last point here: in the upstream research and valorisation of matter, a thesis is underway that analyses a dry-phase methanisation process, at UTC in a collaboration with the Institute UniLaSalle in Beauvais and the Siaap, and another thesis looks at water foaming phenomena. So, what are the challenges for the near future? To discover innovative tools to improve water treatments, to valorise matter downstream while sustaining the level of competitiveness of the companies involved. ■ **MSD**

http://mocopee.com • www.irstea.fr/en

HAVE TOOTHBRUSH... WILL TRAVEL

CLÉMENT GIRAUD, 22 YEAR OLD 5TH YR UTC UNDERGRAD, MAJORING IN PROCESS ENGINEERING (GP05)

So, where did you go Clément? Early 2018, I went to Seoul, South Korea.

And so, why Seoul? I wanted both to go abroad to improve my English and to be in a really unfamiliar place, so out of Europe and the USA. I had already travelled to Vietnam with my parents so I had an inclination to return to an Asian country.

Was this your first trip during your UTC training? Yes, my very first trip and the only trip abroad while at UTC.

And did you attend class-work in Korea? In Korea, I took Energy Engineering and I also attended a course in energy production and storage (solar cell panels, fuel cells, extraction and refining oil). I also registered for a primer course in Korean language and an oral expression class in English.

Did you manage to visit the country? I travelled quite a bit in the capital, Seoul, visiting Palaces and the Buddhist temples. I was able also to visit the local markets and small traditional villages. I went out to a volcano island, I saw the cherry trees in blossom and I walked a lot in the mountains. In short, a stylish trip all told! I also travelled to Japan, Kampuchea and Thailand. I really loved Kampuchea, a country so different from all the others I had seen before. The Angkor Temples are just magnificent.

And what was your best souvenir? I loved the karaoke song sessions with my Korean friends. These were great moments when they could share their culture with me.

And your worst memory? Well, I wanted to spend a few days in China with a close friend who was staying with me in Seoul. The problem was that normally you need a visa to visit China. As we have only a very short time before the trip, we explained the situation to the French Embassy in Korea by e-mail and they told us we could go without a visa. But when we got to the airport, the airline company said "No way" and we were not allowed to board the plane...

What did this journey change for you, personally? First of all, I improved my English – that was my main objective. But I can admit that the trip also allowed me to acquire a more open vista to the world. Discovering new cultures, seeing at close hand how people live elsewhere allowed me to relativize my situation in France and to realize just how lucky we are. I learned a lot on a personal and academic level and I was able to study some subjects we don't have here at UTC. In a word, the adventure was totally positive for me ! ■ GO

©Maya Brahimi pour Plat'Art

AND MY PROJECT WAS ...

"I organized a bathtub race down the Oise river"

Every year, the reporters of Interactions invite our readers **to meet students who have launched original projects**. Today, we interview Matthieu Marchand, a student engineer majoring in Mechanical Engineering who organized September 30, 2018, a bathtub race down the Oise River!

When we recall souvenirs of that Sunday September 30. 2018, Mathieu Marchand's eyes light up and he adds with a grin, "To be quite honest with you, I didn't expect so many people to turn up for the event. IThere were close on 3 000 spectators on the river banks and they followed the bath-tubs as they progressed downstream". He spent 6 months working on his mad-cap project – organizing a bathtub race on the Oise River which runs through Compiegne. Several months previous, in December 2017. Originally, Mathieu wanted to organize – with the students' union (aka the 'BDE') - an event to mark the minds. "We realized that the BDE was a bit short in terms of its notoriety for the UTC students at large. So, essentially, we were looking for a project that would turn the sunlights on what we do". In the beginning, the BDE officers thought of a soap-box race, but a quick analysis turned Mathieu off this project. Finally it fell to Véronique Hédou, head of campus life" at UTC, to come up with a grand idea. "She remembered a few years back that a 'former mariners' association had organized a bathtub race. She invited us to explore this possibility for our theme." So, the concept was to see teams, each with 4 to 5 members, engaged in a race down the Oise River.

> *"We were looking for a project that would turn the sunlights on what we do"*

Imagining the whole event, from scratch

Matthieu then undertook a long, in-depth project feasibility study. "I began by meeting previous organizers of a similar event who sort of chilled my enthusiasm with all the 'Admin' formalities needed", he recalls, "but in fact, I was not discouraged. Next step was to Compiegne's Townhall where I did quite a bit of negotiating and, finally, Mayor Philippe Marini, gave me the go-ahead". Following this phase came the long months as the project was put together, from scratch. Our young undergraduate, majoring in Mechanical engineering, began by choosing a small team – which grew week by week. Their prime job consisted of drafting a 30 page "security measures" dossier. "One of the key aspects of my work was to draft the PPR document (i.e., the plan for risk prevention)", explains Matthieu. "In concrete terms this meant analysing all possible sources of risk during the race and listing and detailing the appropriate measures to be taken to avoid risk and also the list of emergency contacts for D-Day, just in case something went wrong". Matthieu spent hours on the Internet and various forums to get the PPR ready and approved. "At one of my meetings

at the Prefecture, we were told we had in fact done an excellent job", adds Matthieu proudly.

"That was the first time I had to manage such a big team"

The next move was to define the event in all its intricacies and to enlarge his team to handle the work load as the latter continued to build up. "We worked hard all summer", recalls Mathieu Marchand. "Since the event was planned for end-September, everything had to be made totally ready in August". When the university classes resumed, the pace of events accelerated. Matthieu was then entering in his 4th year at UTC and assumed the rank and title of 'Bathtub Event Manager'. Articles in the local press and the "grapevine" spread made the forthcoming event known to all the students and to the inhabitants of Compiegne. All told, ten teams registered for the race. Just a few days before the race, all hands were to be "on deck". "As it turned out we were not too many to handle everything", adds Matthieu. "Consequently, we fine-tuned the programme step-by-step and its missions so that each and every member of the organizing team knew perfectly what role to accomplish on D-Day; I think in retrospect that that saved the day!"

"Consequently, we fine-tuned the programme step-by-step and its missions so that each and every member of the organizing team knew perfectly what role to accomplish on D-Day"


MATTHIEU

'Ready? Steady? Go!'

Sunday September 30 2018. The crowd is already dense at 3 pm when the starter's flag comes down. That was exactly what Matthieu and his friends wanted: to organize an event to bring Compiegne's inhabitants and the UTC students together. And a total success it was! On his small outboard motorboat, following the gaggle of bathtubs on the river, Matthieu grinned from ear to ear. The scene saw the concrete implementation of their long hours of work. The bathtub race truly was a success-story, for the inhabitants, for UTC's students and staff and all, including the Townhall, congratulated the young man and his team. Matthieu is already thinking ahead, to the prospects of "recruiting a new team to take over and organize the second edition of the Bathtub Race". Meanwhile, Mathieu's current challenge is to secure an internship in mechanical engineering design for the coming semester. No doubt that Matthieu Marchand's atypical and en energetic profile will have the recruiters will offer a hearty "welcome on board". ■ **GO**


PIERRE

MY FIRST YEAR AT UTC – EPISODE 1

"Strange feeling … leaving family and home"

During the coming academic year, Interactions has decided to hand the floor to a student who has just been admitted to UTC. When you have just completed your Baccalaureate S, what can you expect to discover at a university. Here is Pierre's answer.

My name is Pierre Gibertini, I'm 18 and was admitted to UTC in September 2018. My home town is Orleans where I grew up and did all my earlier studies. I explain my choice to come to UTC via the high level of pedagogical freedom on offer and the rich pluridisciplinarity of courses. In my lycée, I was quite good in both the scientific and the literary courses, such as history-geography or philosophy. Then, I had to manage my way through the 'Parcours-Sup process' to orient my HE options. I didn't want to limit myself to just science and wanted to explore other subject areas. To be honest, I think I would have found a "classe préparatoire" very boring. Now I'm happy to be in an HE institution where social sciences and humanities benefit from an important status. I also like the idea of being allowed to choose my own course mix. This semester, for example, over and above the obligatory maths class (MT90), I chose one CC in optics, another in computer sciences and their applications and a third one in physics, on the theme : Uncertainty Computation.

I really love the way my Computer Science lecturers teaches things: we don't in fact learn php and html codes, he adds all sorts of side stories and anecdotes that make the classroom a lively place. For social sciences and humanities, I have registered for a course in industrial economics and one in Spanish. At the end of summer time, after the lycée, I admit I was a bit stressed at the idea of coming to stay in Compiegne. I had a strange feeling, leaving family and home. Finally, everything went very smoothly. As of "day 1", we were "thrown in", so to speak, "at the deep end", with a tremendous welcome by the older UTC students. Rapidly I felt I had already been living in Compiegne for years. The period we call "integration" allowed me to meet loads of new students that I still see, day in, day out.

I didn't want to limit myself to just science and wanted to explore other subject areas.

For the moment, I don't know what major I shall choose, but I still have some time on hand to decide. At my lycée, I took computer science as my optional specialty, thoroughly enjoying algorithmics. But again, I also like mechanical engineering, hence my hesitation. To tell the truth, I don't know if I want to graduate as an engineer. I love artistry and creative work, and design. Now there's a field where I could see myself getting a job in the future.

What In expect from UTC, is to meet lots of people with whom I can exchange. I really above all want to have the opportunity to study themes I find 'passionate' and to discover a sector where I can 'really feel the vibes'. Currently my top priority is to navigate correctly through my first set of exams … but I'm not over-anxious at all here. Stay tuned for Episode 2. ■ **GO**

WATCH THIS SPACE

STUDY TOUR FOR UTC STUDENTS IN THE "INTEGRATED PRODUCTION AND LOGISTICS" (PIL) SPECIALTY

UTC students in the PIL specialty (integrated production and logistics) went on a study tour to Germany to meet the world's #1 expert in mass customization. Wednesday, Nov.21, 4:00 am, i.e., very early that morning on the steps outside the Benjamin Franklin Building, all thirty-two students turn up and boarded the bus, which promptly heads off to Aachen in Rhineland-Westphalia, Germany. Later that morning, they attended a lecture by Prof. Frank Piller, chair of Technology & Management of Innovation at RWTH Aachen University and Co-Founder of the MIT Smart Customization Group, Massachusetts Institute of Technology. As Joanna Daaboul (Head of the UTC-PIL course) put it, enthusiastically, "The trip provided a great opportunity for our students and, indeed, I hope it will lead to us setting up some strong forms of collaboration!" After the lunch break, there was no siesta … instead, a visit to discover a factory of the future!

More to come … in the next issue of Interactions…

What exactly is mass customization?

Frank Piller : The expression was first defined by Joseph Pine in 1993 as the "development, production, marketing and distribution of low cost, affordable, goods and services with the sufficient flexibility of individual customization such that every customer finds exactly what he/she wants." In other words, the aim is to provide customers with 'what they want, when they want it'.

How does this concept modify the classic consumption model?

Since the advent of mass consumption, consumers have become more active and indeed are now part of a co-creation process enabling them to obtain a product that really comes up to their expectations. Creating that product has become just as important as owning the product itself.

What will the future of mass customization look like?

Mass customization holds the promise of reduce industrial wastes, notably excess stocks, and the unsold "waste' products… but it can also call for more resources to create a new personalised, i.e., customized product. Quite a lot of research is still needed to assess the 'pros and cons' of mass customization, from the point of view of their sustainability.


JOANNA & HER STUDENTS

CONGRESS

Linking people

ADNAN IBRAHIMBEGOVIC

The CILAMCE (**Ibero-Latin American Congress on Computational Methods in Engineering**) launched in 1977, was convened in Compiegne and Paris, Nov. 12-14, 2018 for the first time in France. The 'Master of Ceremonies' was Professor Adnan Ibrahimbegovic, tenured holder of the Chair of Digital Computation at UTC and a Senior Fellow of the famous Institut Universitaire de France (IUF) since 2015.

XXXIX IBERO-LATIN AMERICAN CONGRESS ON COMPUTATIONAL METHODS IN ENGINEERING

So what are the connections with the international scientific community? They are numerous and the proof here is the convening for the first time in France (Compiegne and Paris) of the CILAMCE 2018 Conference. Albeit its Franco-Brazilian origins, the Conference now brings in scientists from all round the world – Germany, USA, China, Belgium, Poland, Argentina… The CILAMCE 2018 Conference was co-organized and hosted by Sorbonne Universities cluster and the University of São Paulo, Brazil, both of which poles are recognized internationally for their research in engineering sciences. CILAMCE 2018 took place Nov. 12-14, 2018.

Is it because of his Bosnian origins – he hails from ex-Yugoslavia – that he perceives the dangers of isolation? Whatever the reason, Adnan Ibrahimbegovic's constant leitmotiv is the objective of "opening up science". Here is a man linking people: links between specialties, links between laboratories, links established and nourished with scientists all round the world…

The links between various specialties? Adnan Ibrahimbegovic was recruited by UTC to occupy the Chair of Computational Mechanics and, very early on in this post, he rapidly focused on the questions occurring at the interfaces between classic specialty fields. "And, no sooner you pronounce the word 'interface' than there arises a need to see different specialties dialogue together. In short, you need to instil and bolster interdisciplinarity, which it turns out is the only way to make progress in addressing and solving complex problems", he stresses.

The need for interdisciplinarity is self-evident for an ongoing research project at the UTC Roberval Lab: to discover if a CFRP (Carbon Fibre Reinforced Polymer) megastructure can resist operational conditions of extreme strain. "We have two long-term industrial applications to hand: one lies in designing giant, flexible 100 m blade wind generators, each producing 10 MW, i.e., the double of what already exists in Europe; the other lies in future wide-body high capacity aircraft", details Adnan Ibrahimbegovic. Notwithstanding, there are some significant constraints and possible drawbacks to our projects. "Assembling a wind generator using a low density material; increasing the power output must also see compliance with structural resistance when faced with extreme storm (hurricane) conditions. Likewise, the wings of future wide-body aircraft will have to be able to withstand violent aerodynamic forces", he adds.

The question remains – how can we understand and solve problems when no test-rigs in the world enable you to reproduce extreme strains on structure this big?

Here again there are forms of scientific collaboration, between the various specialties involved. At UTC, in the framework of the Labex MS2T, in relevant international circles and with the laboratory for advanced computation headed by Prof. Mathies Hermann, University of Braunschweig – Institute of Technology, Germany. "Our mechanical engineering, acoustics and materials lab (UTC –Roberval) is equipped to produce and assess CFRP test samples (each several centimetres long). Our research team first measures the resistance of these scaled down samples, taking special note of the variability of the measurements. The results we obtain are then analysed at the UTC applied maths lab (UTC-LMAC) and transposed to XXL structures", details Adnan Ibrahimbegovic. The precise way in which two parts made from the same material crack or break differs as a function of their size. In order to quantify the scale effect here, we apply new probabilistic methods and that allow us to demonstrate the risk of catastrophic failure amplification processes on a 100m long item (each wind generator blade).

If you want to engage in interdisciplinary approaches, you necessarily need to 'decipher' the codes specific to each research field, in order to explore new fields at the "fringe of basic research and applied research for applications

If you want to engage in interdisciplinary approaches, you necessarily need to 'decipher' the codes specific to each research field, in order to explore new fields at the "fringe of basic research and applied research for applications. This calls for qualified engineers but also some PhDs. And the judgement I make is that we do not train enough of them. The answer, as I see it, will lie in recruiting more students, especially those with international outreach", deems Professor Ibrahimbegovic. ■ **MSD**

KARINE CHARBONNIER

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et parrains

Your views on training and the territory

Karine Charbonnier, Chair and CEO of Beck-Industries, Vice-President of the Regional Council for Hauts-de-France, Delegate for Training & Enterprise and God-Mother of the UTC's class of 2019.

Sitting on the Regional Council for Hauts-de-France, Karine Charbonnier is in charge of liaising with enterprise. She helps out when it comes to establishing new business, take-overs and/or development for export candidates, accompanies those who would like to innovate or simply grow in size and scale, not forgetting the aid she can offer for recruitment and vocational training. All told, this is a vast remit for a HEC graduate, who accepted, in 2005, the Chairmanship and CEO positions for their family business Beck-Crespel, founded by her Great Grandmother in Armentières opening the (fasteners, screws, accessories …) company to international markets. "Training I see as the definitive key here, including lifelong learning, being curious, reading and training all the way. Increasingly, we now observe alternate phases between training periods and normal worktime. And that amounts to a passion-driven adventure", she adds enthusiastically. The century in which we live is also an engineer's century. Engineering serving humanity's needs. Whether it be in mobility & transport, in materials or biotechnologies, we see the effects of innovation everywhere. Technologies evolves fast. Consequently we must continue to train ourselves to accompany as best we can these changes.

"Young people today have a tremendous opportunity. The future is theirs. I tend to agree with the famous maxim "Time is long but life is short*". Life goes by so fast yet we all have a role to play. Let's not forget that a business company must be "win-win", adds the Vice-President of the Regional Council for Hauts-de-France, Delegate for Training & Enterprise. "Everyone should be enriched through training. When you are young, you are not necessarily aware of the stakes. But everyone must be able to add his/her stone to the construction".

** borrowed from the familiar Latin translation: 'Ars longa, vita brevis', originally a Greek aphorism we owe to Hippocrates*

An entrepreneurial and innovative regional spirit

Enterprise expects that young people display personal ambition and work hard. The fact that they show initiative, like their jobs and assume responsibilities are virtues that business concerns appreciate a lot, both in this Region and beyond. The so-called SRDCEII (Regional Scheme for Economic, Innovation and Internationals Affairs) is the guideline policy for the future of the area. "In our training policy guidelines, we have integrated some innovative content. One of the major principles of our strategy lies in the links we must set up to better meet the needs of sectors and enterprises recruiting personnel, whether it be in terms of orientation and management of the training course offers, or in terms of informing the target populations (young people in training, unemployed job seekers, salaried workers), in order to ensure that everyone can access the best information appertaining to the possible professional openings", she adds. The Regional authorities – after launching Proch'Emploi, which is a unique go-between for employers and job-seekers – has now launched Pass Formation and Pass Emploi. Pass Formation [training] has been designed to accompany job-seekers' individual projects allowing them to access a qualifying, or certified training course, with a direct bearing on the professional projects (career evolution, creation or acquisition of a business concern). "Our Hauts-de-France Region is remarkable for the intrinsic quality of its enterprises" concludes Karine Charbonnier. "Over 5 000 jobs were created in 2017, notably via our capacity to train, the serious approach we take for our work and our sense of collective, public or corporate interests". ■ **KD**

FROM A FAMILY BUSINESS TO AN INTERNATIONAL INDUSTRIAL GROUP

A century later, what was originally a small family business, has become an international group with an annual turnover close to 90 Meuros. There is a network of subsidiaries round the world in strategic places: Greta Britain, Germany, China and Morocco. With more than 600 employees in the world group, Karine Charbonnier, Chair and CEO of Beck Industries foresees a continuation of the strategy of expansion in order to ensure an export growth factor higher than 60% over the coming years, while preserving the family spirit as handed down by her Father before she took over the business.

Beck Industries
Tightening up on Performance

BECK INDUSTRIES
A 100% FAMILY BUSINESS

1918 was the year that marked the end of WWI and the adventure began in the ruins of the family baker's shop, in Armentières, with Helene and George Beck as the shop-owners and managers. It was Helene who proposed they should nor rebuild the bakery and she set up business in mechanical engineering – her second passion – inasmuch as she foresaw a rapid growth of activities as needed to (re)build the local mining and railroad infrastructures. This led to the company Beck-Crespel.

3 QUESTIONS TO...

JEAN-PHILIPPE GOLD,
DIRECTOR OF THE HAUTS-DE-FRANCE MISSION FOR "ATTRACTIVENESS" – THE REGIONAL COMMITTEE FOR TOURISM AND CONFERENCES

You are a strong and devoted advocate for the Hauts-de-France and its attractiveness. Is it your opinion that good quality Higher Education, with local schools such as UTC – ranked as it is #1 among the French PostBac establishments – can contribute here?
An attractive region is one that not only creates talents but keeps them too. These talents regionally trained enrich the territory. UTC is a talent-generator and a very valuable asset for us all here. Many UTC graduate engineers are employed locally and work in an ecosystem that irrigates the entire Region. Good higher education is therefore fundamental. I now realize that the Region nourishes me through my personal experience here, i.e. in a demanding part of France that continuously aims at "excellence". The Hauts-de-France has loads of skills, yet remains easy-going and attractive via its wide open landscapes, where everyone 'reaches for the stars'. When there are occasional breaks from a world pervaded by digital technologies, we are all for it, aren't we?

How would you describe the relationship our Region has with Innovation, Research, Enterprise and Employment?
We have moved on from a raw materials-based economy to a knowledge-based economy. Companies will now market products with a maximum on-board knowledge content. This represents a very powerful vector for local, regional development, where as I see it, there is a constant need to seek innovation. After historic invasions, wars and industrial revolutions, our Region has always succeeded in reinventing itself. Work in the Hauts-de-France has a structuring effect and added value. There have been some difficult situations. These 'wounds' forced us to address issues and problems in a different manner. In the field of tourism, we had to ascertain the visitors' expectations and see where we could innovate. I salute the spirit of excellence, characteristic of our Region and which enables us to reinvent the scene. Our land is fertile and encourages innovation. Many other regions, of course, have their specific assets, but ours lie definitely with the population, their devotion to work and the level of commitment they can and do attain.

Can we talk about UTC's international outreach with its networks in the Americas, China and Japan? Do high level training courses help in terms of the Regions notoriety? Do they constitute a key factor in our current and future levels of attractiveness?
With the advent of the digital era, every economic model has to be reframed in international terms. EDP, TIC and trade today see us increasingly present in global markets. Identifying precisely what the demand is a major issue inasmuch as we find ourselves in a demand economy with a more refined offer and a growing demand. As far as training is concerned, a truly attractive region is one where you can achieve your aims and develop your potential. The entrepreneurial world wants to benefit from the services of the best professionals, the best business managers and personnel with an open vista in their international outreach. The more innovation-intensive training courses we have, corresponding to the new jobs and labour market, the better we shall be in a position to fertilise the global economy and likewise the regional tourism for our Region, notably in business-oriented tourism. Indeed, what makes for a difference today is that this multi-format, intellectual and technical combination, associated with the aforementioned international outreach, attained by numerous local companies relying on the rich and competent engineering graduates who come through UTC. ■ **KD**

TRAINING

10th anniversary for apprenticeship training at UTC

End September 2018, UTC celebrated the 10th anniversary for apprenticeship engineering courses at UTC. This engineering school has a team devoted exclusively to the apprenticeship scheme and invests a huge amount of tile and efforts, especially in communication targeting candidates' parents. **Below Interactions relates some significant examples of apprenticeship graduates enjoying excellent careers.**


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The association of UTC apprentices, Apprenteam, organized an especially friendly, games-oriented, Saturday event (Sept 22) with quizzes and role play sequences offered to the one hundred graduates, academics and members of the apprenticeship staff. Numerous graduate witnessed how they had fared in this engineer training course by apprenticeship that UTC proposes, covering three years of the five years needed to gain engineering diploma. "The first class (that of 2008) are all now professional engineers and well-place with their respective companies. We would be wrong to imagine that student life ends after the apprenticeship phase and, quite often, we see the graduates going for a PhD thesis, for example", recalls Karine Sliwak, who is in charge of the UTC apprenticeship engineer's' scheme at UTC is happy each year to answer the great many questions from companies who 'adore' UTC graduates in general and the UTC apprentices even more. "The issues lie more with the students and their families. The vison they have of apprenticeships is not always positive; what they perceive is manual, poorly qualified, work". Admission to the UTC apprenticeship is just as demanding as that for the normal engineering course. The future apprentices must be as satisfactory to the engineering school as they are to the companies that hire them. "There are very few engineering schools in France who place such an emphasis on the merits apprenticeship. The apprentices have access to an excellent training course delivered by the lecturer-cum-research scientists of UTC, with a three year professional experience that is engineer-oriented and also includes an internship international period with a minimum 3 months stay abroad", details Karine Sliwak.


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KARINE SLIWAK

Changing mentalities

One thing is for sure. The added-value of an apprenticeship for the students is the immediate professional experience they gain. When they come onto the job market that have already had a rich and wide-reaching experience. And they have a far better self-assurance. "As I see it, the experience had during my apprenticeship is better than through an internship, given that the missions and investigations were often far richer than in a simple internship period. An apprenticeship also allows you to better understand how a company operates; we are "integrated" over a much longer period of time", witnesses Geoffroy Pagnoux, 30 years old, UTC graduate from the apprenticeship scheme, class of 2008. ■ **KD**

"I recommend training by apprenticeship which allows the future graduates from this scheme to acquire engineering skills gradually in an industrial context. Moreover, the future graduate is better prepared to enter the job market as soon as the training comes to an end and can face up to the requirements that are concomitant to this sort of training (responsibilities, efficiency, aptitude to managerial functions and management of change ...)"

Eric Eloundou Nyebe, 32 years old, Supply chain and Customer Support Manager with Air France Industries

Campus-Enterprise UTC, an alliance between students & enterprise

Morgane Roussel and Marion Lecostey are the 'commando' style duo behind Campus-Enterprise UTC, which aims at creating synergies between the students and business enterprises seeking to ensuring appropriate and promising recruitments.

This is the very essence of the missions assigned of UTC: to develop interactions between the engineering school and the industrialists. Working at the UTC pole for training-enterprise affairs, Morgane Roussel and Marion Lecostey play their part in contributing to professional insertion of the (under) graduates. Their common aim is to create a win-win situation between those enterprises looking for young staff recruits and (under)graduates with the relevant skills and knowledge bases, and students looking for either a first professional job (or an internship). Marion is more specialized in the upstream segment and is now a well-known figure for the industrialists, especially the recruiting officers and those in charge of liaising with the engineering school. She has built up a network she keeps informed, enthusiastically " My idea here is to better understand the approach and expectations of the partners : to understand their business activities, the professional jobs they rely on, to identify their recruitment needs and to establish a relevant link with our training course offer and the aspirations of our students. The latter are not just looking for an internship but more a professional experience in phase with their personal projects, values and convictions. It is also primordial to assess the way a company wishes to build and entertain its relations his with UTC give that in this kind of collaboration, our investments are mutual", explains Marion Lecostey, in charge of development of the relationships between the students and the enterprises. To illustrate, we recall the case of Cédric Mahut, student engineer majoring in Mechanical Engineering, Bac +5, specialized in Integrated Production and Logistics (PIL). He is currently doing his end-(of-studies internship with Safran. "Whatever major we choose, UTC offers numerous occasions to meet company reps, in job overview lectures, Manpower lectures, special conferences or visits. I was fortunate enough to benefit from all these opportunities during my 3 years in my UTC major period", says Cédric. "So, what events did I prefer? The visits assuredly. Each visit showed us a different corporate culture, both in the fields of logistics or production or again in manpower organization. These events allow for excellent forums of exchange and, indeed, I was able to overcome my natural timidity to discuss with the company staff."

My idea here is to better understand the approach and expectations of the partners : to understand their business activities, the professional jobs they rely on, to identify their recruitment needs and to establish a relevant link with our training course offer and the aspirations of our students.

KEY FIGURES

- 1 500 students on campus in year 2017-2018
- 50 events every year
- 40 business enterprises involved
- 7 contract partnerships

Three levels of information

Physical face-to-face contact – beyond the first level of building relationships which implies that a company communicates its internship and apprenticeship offers – lies at the heart of the system. If we note that inter-enterprise events – such as the Comutec Forum held Oct 18, 2018 – have existed for several years now, the UTC Campus-Enterprise offer goes further, proposing a third level of actions which are both personalised and specific: tailor-made events that require a more sophisticated level of engineering. "Our remit is to define the relevant action(s) for each company. Tailor-made events take time to design and orghnaise, and also manpower and financial means and more than these, the support of the UTC actors, i.e., that of the pedagogical specialists and the logistic & support services", underlines Marion Lecostey. As soon as the actions are approved and scheduled, it is Morgane Roussel's turn - as the UTCD staff exective in charge of professional insertion of the students, to come on stage. Iy is her responsibility to ensure that all this previous work can be concretely implemented, viz., fully operational. The end-result is an well-filled, rich agenda of events "My job is to define the underlying objectives, to adapt each communication action, to the visual identity of the company involved, improving their presentations". Morgane and Marion underscore the precious help they get from Jennifer Leroy, who contributes to the duo's work in terms of administration and logistics solutions needed for the events. Visits to factory sites, to R&D centres, after-works, technical conferences, job-oriented lectures, speed-recruiting and whole host varied formats, constantly adapted to the structures, to training courses available and to the students. "The advantage of the UTC Campus-Enterprise offer lies in its flexibility and ready adaptation to the actions according to meet specific needs. Inasmuch as I am responsible for the Integrated Production & Logistics (PMIL) specialty at UTC, my colleagues have clearly understood my specific needs, were able also to translate them into an attractive language that can easily be understood by the client companies creating an industrial collaboration which benefits the pedagogy of the operations", says Joanna Daaboul, senior lecturer and head of the PIL specialty at UTC.

COMMUNICATE, COMMUNICATE, COMMUNICATE...

Morgane and Marion have been working together now for over 18 months to design and propose a more professional, more pedagogical and more qualitative offer. And for this, the "communication" policy lies at the heart of the Campus-Enterprise offer. "We serve the interests of the UTC students and their professional recruitment. And concomitantly", they conclude, "we have become a focal point for the enterprises interested." E-mail campaigns, posters and billboards, the UTC Intranet, Facebook™, regular publications and valorisation of their activities on the social network Linked-In™, have opened portals and doors for exchanges with new potential partners.

A female duo that really works

There is a real complementarity between the two women: Marion has a privileged contact with the manpower managers of the enterprises, while Morgane deals more with the students. Both know where and how to intervene to engage a relationship with an enterprise seeking better visibility with its potential publics, or how to valorise (a) training course(s) which is (are) often ignored by relevant recruiting officers. By deploying lots of energy (and taking immense pleasure in doing so), they have built up excellent relationships with major companies, among which (non-exhaustive list) we can cite: Chanel, Decathlon, Eiffage, Faurecia, Microsoft, Plastic Omnium, Renault, Safran or Saint-Gobain, The Campus-Enterprise initiative, over time, has become a tool capable of organizing regular events and innovative training formats, i.e., the wherewithal to add a new value to UTC and to its students! ■ **KD**

START UP

Hepic
the Creatives' App

WHAT EXACTLY IS A PROGRESSIVE WEB APPLICATION?

It is an "app" that:

- uses the latest technologies, combining the best on the Internet with mobile "apps".
- is accessible from the navigator where it can be consulted as a classic site.
- can be downloaded to one's personal mobile phone and used as an "app", operating under OS or Android ™

Creative competitions, especially photographic are a great way to federate a community, to promote an event or a brand of product/service, while proving high-quality content. In most cases, competitions like these lack in visibility on the Internet and this penalizes the organizers and discourages potential participants. Four UTC students have come up with the solution, **a collaborative platform that brings competitions together, which they have baptized by the name of 'Hepic'**.

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HUGO - EDGAR - THÉODORE

© Pics'art

Helping to set up competitions, hosted on an exclusive platform, with built-in legally compliant management processes… Edgar Jullien, Hugo Lechleiter, Théodore Bourgeon and Alexandre-Guillaume Gilbert),the four students focused on making their progressive "app" as simple as possible to use for both the competition organizers and the participants. In this manner the 'creatives' can participate and vote in all the competitions on the platform, while the organizers (be they enterprises, SMEs, associations, townhall, events, etc.) can easily download photo, videograms … once the competition is over.

A project encouraged and supported by UTC

"This idea occurred to us two years ago and UTC encouraged us to pursue via the so-called 'Elite Entrepreneurship' programme, which enabled us to be counselled by professionals and to benefit from a tailor-made lecture schedule so we were able to devote time to our project", explains Edgar Jullien, co-founder and CEO of the "app", matriculated in the Mechanical Engineering specialty Innovative Project Management (MPI).

Building up a community of creatives

Hugo Lechleiter, co-founder and designer of this "app", matriculated in the UTC specialty IDI (mechanical engineering design) has a longer-term ambition "We would like to welcome a host of 'creatives' on to our platform, progressing towards a mutually beneficial collaboration between the creatives and the competition organizers". » ■ **MB**

OPEN COMPETITION

YOUR PHOTO ON THE FRONT PAGE OF THE NEXT ISSUE OF INTERACTIONS

To celebrate the new format of its house magazine, UTC proposes a photographic competition in a partnership with Hepic! The winner will be able to admire his/her photo on the front page of the next Interactions, issue #49! Runners-up N°2 and 3 will see their photos printed in the magazine.

To register for the competition:
- Rendezvous at the Internet site hepic.fr
- Register via Facebook or Google
- Post your best photo on the theme "Interaction(s)"
- Dead-line 31st December 2018!

The Jury below will convene to select the best three photographs!
Philippe Courtier, President and Vice-Chancellor UTC
Etienne Arnoult, UTC Director of Training and Pedagogy
Anne-Virginie Salsac, lecturer-cum-research scientist UTC BMBI Lab
Dorothée Tombini-Prot, graphic artist, UTC's Directorate for Communication and PR
Paul Sainte-Cluque, President of the 'BDE' Students' Union UTC
Nolwenn Righetti, President of Pics'art, UTC's association of photography

THE RADIOLOGY DEPARTMENT TEAM (CLINIQUE SAINT CÔME - COMPIEGNE) WITH SABINE BENSAMOUN AND DR CHARLEUX

RESEARCH

Sabine Bensamoun, a research scientist at CNRS, has been coordinating a team of close on 40 persons in the joint CNRS-UTC-BMBI Lab since January 2018. Their research focuses on two main themes – elastographic analysis of muscle and liver tissues and the role played by the TIEG1 gene in muscles. Interactions presents her portrait: a woman with an ingrained inclination for research.

An ingrained inclination for research

It was when she returned to France in 2006 after completing two years in Postdoc work at the Mayo Clinic in Minnesota, USA - a world-class medical research unit - that Sabine Bensamoun launched her two research programme themes. The Mayo Clinic recently developed a module – coupled to MRI (magnetic resonance imaging) analysis - aimed a characterizing the mechanical and functional properties of the human liver. The expression here is magnetic resonance elastography (MRE). The aim, as Sabine Bensamoun sees it is "to establish a better diagnosis as to the severity of the pathologies detected, to improve on patient monitoring, personalizing treatments, etc." The MRE protocol still remained to be certified. UTC is registered as one of the ten research units in the world selected for certification (and the only one in France) that possesses an MRE setup. After years of research, the data and results were analysed at the Mayo Clinic. For all parties involved the wager paid off, including for UTC. That was how MRE became a more efficient, less invasive diagnosis tool, addressing cases of liver fibrosis.

And this was how Sabine became interested - in the framework of a resrecah contract with another partner, Echosens Ltd – in another liver pathology, viz., steatosis, a term denoting the percentage of fat in a liver. A prototype setup, called 'Fibroscan", has been made available to her research team and has already provided some highly conclusive results.

In 2013, the MRE and Fibroscan module platform was installed at the Clinique Saint-Côme, thanks to the vigorous commitment of Dr Charleux and all the Saint-Côme teams, the practitioners, the 'admin' staff and the technical support personnel. "The clinical trial period has begun, with a selection of some 200 patients", underlines Sabine Bensamoun.

"To establish a better diagnosis as to the severity of the pathologies detected, to improve on patient monitoring, personalizing treatments, etc"

Two other projects, related to muscle fibres, have been launched too. The first is under way at the Saint-Côme Clinic, with an MRE setup devoted exclusively to muscle studies has been installed and concerns muscular ageing and Duchenne muscular dystrophy. Two publiciations[1], 2011 and 2015 respectively, set out the first results of the research programme. The second characterizes face muscle activities, and is a study in collaboration with surgeons Professors Devauchelle and Constans at the teaching hospital in Amiens.

SABINE BENSAMOUN

We should bear in mind that Sabine Bensamoun's PhD thesis has, as its title, "Multi-scale characterization of mechanical and morphological properties of the musculo-skeleton system". In other words, it dealt with bone, tendon and muscular tissues. During her two year spell as a Postdoc at the Mayo Clinic in the USA, Sabine worked on bone and tendon ageing, notably with Professor Spelsberg, who discovered the TIEG1 gene. "In order to study the role played by this gene in bone tissues, we used TIEG1 KO mice created specially at the Mayo Clinic, and which did not possess this gene", she adds. She managed to bring back some specimens of the IEG1 KO mice offspring, which are registered under Mayo Clinic property rights, and pursued her investigations on the TIEF1 gene with UTC team members, Philippe Pouletaut and Malek Kammoun, examining in particular the role of the gen is certain human muscular disorders. Clinical studies are under way in relation to illnesses such as osteoporosis, cardiomyopathy, and cataracts or as markers for certain forms of cancer (breast, ovary). We now know that absence of TIEG21 leads to muscular hypertrophy with an alteration of shape and activities of the mitochondria in cells the main role of which lies in cell 'respiration' and hence in the compete respiratory system.

Sabine proves tireless when it comes to the advancement of science and she has thus far been able to mobilize 5 research teams in France and 3 more in Europe (in Germany, Hungary and Estonia), to try to identify the mechanisms and operational mode of thyen TIEG1 gene, which raises, she thinks, a key question: what role does absence of TIEG1 (or its sub-expression) play in certain muscular disorders such as the Duchenne muscular dystrophy, or mitochondrial myopathy…?

What is the driving force and wish of Sabine Bensamoun? They will be to reinforce and stabilize in time her research team(s) so as to progress in her analysis of the TIEG1 KO strain of mice. Failing which, the results already obtained will be welcomed by the Mayo Clinic enabling it to identify - in the mid-term - new therapeutic strategies to address muscular illnesses or exercise intolerance. ■ **MSD**

1- www.researchgate.net/profile/Sabine_Bensamoun

FLORENCE CONSTANT

A Woman serving Humanity

After 26 years with the Danone Group, where Florence Constant was one of the first women in France to be appointed as Director for a factory production site, she moved on to join the McCormick Group in 2016, again to direct a production plant at Carpentras. Thursday October 4, 2018, she participated in a special "Boost your CV" Day organized by Tremplin UTC (the UTC alumni association. Below is a portrait of this woman – decorated in 2013 with the insignia of chevalier in the Ordre national de la Légion d'honneur - who sees human and collective needs and interests lying at the heart of her preoccupations.

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Maybe it was the harsh nature she grew up with in Auvergne, that gave Florence a taste for accepting hard work, a certain form of realism and also the capacity "to think outside the box". Put differently, Florence Constant does not hesitate at all to think beyond the common, consensual framework. She will always question orthodox hearsay and widespread opinions. As she herself puts it, the worst brakes to initiative are those we build ourselves and she encourages young people, particular young women, to avoid "any and all forms of self-censure when it comes to professional choices and decisions". After all, was she not in 2014 one of the first women to be appointed as an industrial Plant Manager in France. She showed a wide sense of openness with respect to her colleagues and staff and as she says, he has the feeling that "nothing can go right until we have a tightly bound team!"

And this inclination for hard work, where did it come from? Partly through practicing and playing high-level basketball, in Bourges where her parent teachers has been appointed... well, until some painful back trouble forced her to stop the basketball

Her sense of realities? Initially she wanted to become a « vet » - she spent a lot of her free time travelling round the Cher countryside with a professional veterinary doctor, but finally, having given thought to her own future, she opted to do a "classe préparatoire" at the Lycée du arc, Lyon. This choice was due to her interest in agro-food businesses and her deep conviction of the noble aspirations of a sector the finality of which is to feed the planet, with all its "varied and interesting professions".

Succeeding in a number of competitive admission exams, she yet again demonstrated her capacity to think differently and chose to integrate UTC via the analysis of her scholastic dossier rather than go to a classic engineering school (grand école) which she deemed of medium interest. "What I liked in the UTC protocol where my examiner not only took my school marks in account but also assessed my past in basketball and music". It was an opening that enriched me, by ricochet.

It was during her first professional experience that she acquired a sense for serving others and collective systems. Her appointment was as QA engineer (quality assessment) in a Danone factory unit in Charleville-Mézières in the Ardennes (East France), Florence Constant encountered the archetypal boss "authoritarian, misogynous … old-fashioned management in short". She decided to adopt exactly the opposite style and format and ever since she demonstrated, in every position she held with the Danone group up till 2016, that creativity, innovation and tem performance only are made possible if "we work together with synergy and complementarity rather than endure rivalry and authoritarianism".

The prestigious decoration of Chevalier in the National Order of the French Légion d'honneur, crowns not only an outstanding professional career but her display of human qualities that everyone who knows her readily acknowledges. The insignia were formally granted during the 2013 Agricultural Fair in Paris, by Minister Muriel Pénicaud (Manpower Resources and Employment), former Director of Manpower Resources for the Danone Group. ■ **MSD**

BIO-DATA

1989: graduate engineer UTC majoring in bio-engineering (UTC-GB)

1990: appointed QA (quality assessment) engineer in a Danone factory in Charleville-Mézières (West France)

2013: appointed Plant Manager with the Danone group and decorated with the insignia of chevalier dans l'Ordre national de la Légion d'honneur

2016: Plant Manager, Production plant in the McCormick Group at Carpentras (South France)

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