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Donnons un sens à l'innovation

Interactions

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What exactly does innovation mean ?

Jean-Michel Besnier, lecturer in philosophy and PhD in political sciences (University of Paris-Sorbonne) *Page 12*

FROM THE PRESIDENT'S DESK

Let's innovate and pull together, for UTC!

UTC's recently inaugurated Innovation Centre, the overarching Local Innovation and Creativity Ecosystem, its Directorate for Strategy, Enterprise and Innovation … are all tokens to the original commitment of our University to meet and fulfil its Innovation mission objectives. This policy is now well anchored in the university culture and strategy but also now opens a new field that our collective intelligence must penetrate, calling as it does for an innovative, creative and humanist approach to serve the development of the University itself.

A series of factors, running from the 2 Meuros the HE&R Ministry intends to shave from our current operations account, the somewhat dark prospects that lie ahead in terms of the university budget for coming years, the degrees of uncertainty - not to say pressures - that come with the Government's planned Regional reshaping programme and impact the notion of 'academic-university sites', the strategic challenges facing our training and research schemes … some of which events are quite recent, all plead for us to direct our capacity to innovate to serve the needs of UTC. Not that we need (nor intend) to rethink our fundamental features, our key values, but 'the time has come', so to speak, to see UTC's development model evolve, in order to better integrate the new constraints of our environment, as well as the new opportunities!

Our strength lies in innovation and relies on UTC's human resources, as is clearly set out in this issue of Interactions, in the Global Innovation Index, co-edited with our partner INSEAD in the Sorbonne Universities Cluster! Our human resources at UTC are characterized by their diversity, in terms of cultural backgrounds, geographic origins, socio-professional categories... we must now draw on this capital asset, enhancing the convergence of internal sensitivities, so that UTC can maintain its privileged position in France's Higher Education and Research scene and not run afoul of the threat we see today, one that seeks to level and standardize our universities. We have the means to avoid this; we also have the ambition to succeed! ■

Professor Alain Storck
President and Vice-Chancellor, UTC

Workshop Innovation and Knowledge Intensive Approaches for Computer Supported Cooperative Work in Design

The CSCWD 2015 workshop, organized by the UTC Heudiasyc laboratory, was held May 4, 2015, at the Innovation Centre. The objective assigned was to discuss procedures and practice in computer supported co-operative work in complex environments. ■

http://webtv.utc.fr/watch_video.php?v=R9YK879GB607

The University Enterprise Meetings (RUE)

In the framework of the French Universities of Technologies (UT) Group, UTC was present at the University Enterprises Meetings and took part especially in the "Zooming on Open Innovation: the innovation campuses and centres, FabLabs, etc". At the Sorbonne Universities Cluster's stand, visitors were invited to test the tactile TATIN table. ■

http://webtv.utc.fr/watch_video.php?v=R9YK879GB607

Cyberbulle, a comic book Festival at Compiègne

« CyberBulle », the first semi-virtual comic book festival welcomes numerous artists and scientists, including Marion Montaigne, well-known for her character 'Professor Moustache' in her blog "Tu mourras moins bête [You will die less stupid]". Visitors exchanged with the artists on the role that science-intensive comic books could play, in creative processes … ■

http://webtv.utc.fr/watch_video.php?v=R9YK879GB607

The Alyssa Meeting

UTC, as a partner to ALYSSA, organized the 4th ALYSSA Meeting, April 13 to 16. The ALYSSA Project supported by the European Commission, finances student

CHAIR

E-Biomed
a new academic chair for connected biomedical objects

The mission assigned to the new academic Chair «e-Biomed is to create new connected biomedical objects (a joint Chair between UTC and University Paris 6 - Pierre & Marie Curie (UPMC)); the first titular holder of the Chair is Dan Istrate, a senior lecturer and research scientist at the BMBI UTC Laboratory (Bio-Engineering and Bio-Mechanics).

Dan Istrate sets the scene "This Chair is part of the context for the creation of a new University Institute for Health Engineering (IUIS) proposed by UTC and UPMC in the Sorbonne Universities cluster. IUIS will be placing health concerns at the heart of a research/innovation/technology transfer/training 'package' designed to meet and resolve new challenges in this field. So-called "e-health", is indeed one of the 4 priorities assigned to IUIS with the e-Biomed Chair (connected biomedical tools) offering both a host structure and the tools". The e-Biomed Chair will be connected to the BMBI lab at UTC, but also with UPMC laboratories and is currently building up links with the UTC Heudiasyc lab, the MS2T "labex"*, etc. [*French Government certified 'excellence' laboratory].

From well-being to biomedical fields

Dan Istrate has noted that connected objects today increasing address questions of well-being and biomedical engineering. Joggers can read and store real-time measurements of the number of calories 'burned' during the run, their pulse rate and even the 02 concentration in their blood-stream … However, these new tools were not designed as biomedical applications and indeed they do not necessarily comply with medical/sanitary standards. "The main challenge for the e-Biomed Chair is to introduce the connected devices into the medical world, following 3 clearly identified development axes: an ageing population, increased occurrence of chronic illnesses and risk pregnancies", details Dan Istrate. The question is: how can connected biomedical tools contribute to allowing elderly patients to stay at home? To facilitate monitoring of diabetes patients or accompany a patient during recovery from a cerebrovascular accident (CVA)? To monitor and manage risk pregnancies?

A technology-intensive shop-window at UTC

In order to design and test connected biomedical tools, an integrated platform is being installed at the UTC Innovation Centre. The Centre provides "a scale one simulation, with a "house" equipped with the tools we want to assess and this house will gradually become our technology-intensive show-room", adds Dan Istrate. In keeping with the same logic the Chair will contribute to thinking about a Living Lab in Picardie Region, supported by the Sanitary Co-operation Group (GCS) for e-Health in Picardie. The e-med Chair will be organizing the 5th edition of the 'TeleHealth' Day, May 27-28, 2015 at UTC on the thematic "Connected biomedical tools for e-health". Research scientists, industrialists, public authorities, device-users and health sector professionals have been invited to exchange on 4 topics – connected e-health tools, handicapped persons and tele-health, tele-health and care schemes.

Integrating sound in monitoring systems

Moreover, the new chair – in collaboration with the GCS-e-Health Picardie Region - will be organizing 6-day primer training courses, on "telemedicine basics". The first course was given in January 2015 at UT6 in the framework of the Master's degree "Health-related Technologies and Territories, and a second course will be proposed in December 2015. Dan Istrate is himself a specialist in sound sensors and has thereby introduced a new field of research which is not integrated to any significant degree as yet in connected devices, making use of the sound environment. "Thanks to sound sensors, it is possible to detect a 'potential emergency situation' consequent to a fall, to a sudden discomfort – where specific, unusual, stressful sounds can be made by the person in suffering. Sounds carry lots of information and a microphone is far less invasive than a camera: potentially at risk persons will accept a microphone more readily to help monitor their case on a daily basis". The Chair is planned for an initial tenure of two years. The objective is to successfully complete one or two projects including the associate technology transfer aspects and then extend the tenure of the Chair. ■

d'infos plus ▶ **http://www.sorbonne-universites.fr**

d'infos plus ▶ BMBI Lab. : **http://webtv.utc.fr** > Nos séries > Les laboratoires de recherche

CHAIR

A Mechanical Engineering Chair for the Picardie Region

The new 'Picardie Region' Chair in Mechanical Engineering was inaugurated end March 2015. For 2 days, an inaugural conference focused on the core missions assigned to the Chair: "Challenges of innovation in mechanical engineering and prospects". Interactions questioned Professor Adnan Ibrahimbegovic, first titular holder of the Chair.

"This creation – a Mechanical Engineering Chair for the Picardie Region - is the result of an initiative and the desire expressed by UTC to structure and strengthen the offer in this field with job openings and means to meet the challenges of our industrial partners", says Adnan Ibrahimbegovic by way of an introduction. Among these challenges, there is the trend to globalization which heightens the battle in terms of competition and here, innovation is the only saving solution. "We are also going through a transition period as far as R&D is concerned: major companies are no longer able to retain large number of in-house research staff", stresses Professor Ibrahimbegovic.

Mechanical engineering at the heart of the Region's economy

R&D activities are increasingly outsourced today, and therefore partnerships with external laboratories and other research establishments has become necessary. "UTC itself was created with, inter alia, an applied research objective and the aim to establish close links with all sorts of industrial sectors: the new creation of a mechanical engineering chair corresponds to the challenge today to federate manpower capacity and finances to innovate and create long-term partnerships", analyses the professor. This the historic connection between UTC and other establishments (CETIM, CEREMA, ESI-Group, Altair, Delta CAD, IRT-Railenium, PlasticOmnium …) led to their being invited during the conference second day to explain their needs and expectations. The Picardie Regional authorities financially support the creation inasmuch as mechanical engineering per se is one of the pillars of the Region's economy. "Whether it be in transportation (rail, road and water-born) or in health matters or energy, mechanical engineering is a key component", underscores Adnan Ibrahimbegovic.

Making available forces blend with a project-oriented logic

In energy-related fields, wind-power is interesting both for the prospects of developing offshore windfarms and also to solve certain land-based windfarm problems (e.g., designing flexible propeller blades to cope with and absorb extreme wind conditions). For health-related issues, some advanced collaboration is already envisaged with research teams at the UTC-BMBI (bio-mechanical and bio-engineering) laboratory. "Our objective is to make available forces blend with a project-oriented and which could lead our preparing and submitting European level projects", adds Professor Ibrahimbegovic. The initial tenure of the Chair is for three years with the assigned objective to set up as many partnerships as possible, in connection with UTC's Innovation Centre and its new Foundation and thereby assure that the Chair can have its tenure extended. ■

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LEAN TECHNOLOGIES

Suplight, using recycled aluminium in aeronautics, cars...

In both aeronautical and automobile sectors, one of the main challenges for design and production engineers is to lighten the frames and bodies by reducing the weight of each component part, in order to reduce fuel consumption. One solution is to produce parts in aluminium, which has excellent mechanical properties plus being a light material. However, producing aluminium needs lots of energy input, consumes lots of water and has an intrinsically bad ecology rating. The aim of the European programme "SupLight" is to help solve this problem – it is financially supported by the Picardie Regional authorities, who target improved method development to produce aircraft and automobile parts using 75% recycled aluminium.

The SupLight programme is led by a Norwegian techno-centre, SINTEF, with no less than 11 European partners co-operating, from both the academic and industrial sectors: EPFL (Lausanne), Hellenic Aerospace Industry, Newman Aluminium, the University of Chalmers, the Norwegian University of Science and Technology... The main objective: to lower as far as possible the carbon print and water consumption by in reducing more aluminium in parts that normally would not be allowed "Aeronautical industries only allow primary (first smelt) aluminium for structural components, essentially for reasons of mechanical strength and quality control assurance", explains Julien Le Duigou, research scientist and lecturer in UTC Department for Mechanical & Systems Engineering. "We set ourselves the target of using up to 75% recycled aluminium" says Benoit Eynard, also a lecturer and research scientist, and Director of the GST Future factory project: mechanical and production engineering for the French association of Mechanical Engineers. Today we can reach – with difficulty – 20% and using only internal recycling, i.e., the chips produced by bulk machining processes of primary

mobility grants (also for PhD and post-doc students) plus academic staff among the universities and higher education institutions in Tunisia and Europe. ■

Guillaume Ouattara laureate at the Fine flowers Eloquence competition

May 6, 2015, Guillaume Ouattara, a UTC undergraduate in Technology and Humanities, won the final round of the Fine Flowers Eloquence competition that took place at the Bibliothèque Nationale de France (BNF). The 4 finalists were: Guillaume Ouattara (UTC), Nicolas Gershater (UTC), Maïté Sibileau (UTC) and Anne-Laure Delaunay (University Paris 4) ; they had 3 days to prepare for the stage delivery and had to address, positively or negatively, one of the two following questions "Can you really lose your soul?" et "Are some feelings forbidden?". ■

https://webtv.utc.fr/watch_video.php?v=ANBW7MSD7R9N

aluminium billets. The choice for the co-operating establishments and labs was to opt for a multi-disciplinary and multi-level approach. "We studied recycled aluminium in terms of its chemical composition, its mechanical properties but also took into accounts its origins, in order to identify and qualify a material that would be acceptable to the aeronautical industrial sectors", adds Julien Le Duigou. "We also looked at parts optimization as a function of the properties observed in the new material and, likewise, we looked at process improvement possibilities. In the framework of the project, the UTC Roberval Laboratory looked after the reverse logistic circuit, viz., the collection of the 'used' aluminium and bringing it back to the re-treatment stations, to be integrated in the aluminium production 'line". "Today, recycled aluminium is less resistant because the supply chain does not sort out the various sorts of returned, used, aluminium. We find car parts mixed with soft drink cans and this leads to producing aluminium with lots of impurities", says Benoît Eynard. "It is got this reasons that this recycled aluminium is not allowed in aircraft part production, because it lacks in mechanical resistance." UTC Roberval after analysis decided that a new process was needed if they wanted to reach a 75% recycled aluminium content with a different metal sorting protocol and also modifying the chemical content (with specific additives), producing a metal with a better

mechanical resistance factor.
Beyond changes in the way aluminium is collected, the teams also had to take into account factors to integrate the ecological dimension. Benoît Eynard wonders: "If, for example, we analyse recycled aluminium from China, the question arises: is it still ecological and economically profitable to use?" "We have calculated that using recycled aluminium, we could reduce CO2 emissions by 20% and water by 40%", details Julien le Duigou. "And, by the end of the project, we had managed to make parts some 10% less in mass containing 75% recycled aluminium with exactly the same properties of mechanical resistance as a prime (first smelt) machined part." "What we must do now is to move on to industrial prototyping, to test the viability of our methods », concludes Benoît Eynard, "i.e., to see how we can re-organize the gathering of used aluminium and how we can identify new uses in industry". Moreover, the approach adopted and tested could possibly be transposed to other manufacturing processes. ■

d'infos plus ▶ Roberval Lab : **http://webtv.utc.fr** > Nos séries > Les laboratoires de recherche

START-UP

Nemopay, a 100% UTC start-up acquired by Weezevent

Arthur Puyou, Mathieu Guffroy and Thomas Recouvreux, three students at UTC in the Computer Sciences and Applications speciality, began developing their project for a cashless pay system, based on the UTC student's card. The aim was to simplify things for both students and associations. "Our system was immediately adopted and has been extended to numerous associations", recalls Arthur. Today they have sold their start-up "Nemopay" to Weezevent, an actor in the world of ticketing and on-line registration.

"In the beginning, our objective was to offer the opening of a single account, at the student's Bureau, to simplify and optimize personal and association accounts. With Mathieu and Thomas, we developed a system enabling the students and other users, to debit and reload their credit card. That way the holder could pay for travel expenses, attend events … Then the system was adopted by ITC itself to run the photocopy services, the automatic distributors … Finally, our system was installed for all the pay services on the campus!" says Arthur Puyou, beaming. The system is cashless, and non-contact in a closed loop design which can be a school, an entertainment park, a company … The aim is not to compete with classic bank card settlements, but to equip well-defined spheres with an in-house pay-scheme that avoids people having to carry small change around.

First client: LaSalle-Beauvais!

The solution and the offer were so simple that the team was rapidly contacted by other engineering schools. The first client will be the Picardie region school LaSalle-Beauvais. "We offered to share the source-code, but it turned out that they preferred to pay to use the system. That gave us the idea to market the product" Nemopay was created by the three students, who hesitated a little before launching the system, at the end of their diploma cursus. The question was - do we go it alone as entrepreneurs or do we prefer to look for a salaried job? "We wanted to work together to develop our product, something which we liked a lot; in fact, we were not really taking a huge risk; if the worst came, we would have learned a lot and eaten spaghetti for 6 more months non-stop!" Another safety net lay in the dynamic employment market at the time our trio graduated, especially in computer sciences and applications. So they set up shop in Paris, where they sought out clients and prospects,

including Weezevent – where Arthur Puyou had done an end of course placement. Since then, Weezevent have bought out Nemopay to launch the first integrated cashless ticketing system.

From UTC to Weezevent

"As we saw it Nemopay introduced a real added value to on-line ticketing: Weezevent's customers only need to make one stop for the ticketing and pay at the event door entry" explains Arthur. "For us the credentials and commercial skills of Weezevent are essential factors to success and so now we are free to concentrate on our core skills – to continue to improve the product and its technical solutions". Arthur is convinced that UTC played an important role in their adventure: the a la carte choice of course and key lecturers for the development of their solution – covering technical, legal and operational aspects and the associative local life to test the beta versions. Today, Mathieu Guffroy lectures at UTC in a credit course for software development and web architecture. ■

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d'infos plus ▶ **http://www.weezevent.com**

The Global innovation Index 2014

The Bible of World Innovation focuses on manpower resources

The Global Innovation Index Report - covering 143 countries with its 81 criteria, and an uncontested leader in the field for the past 4 year, viz., Switzerland - sets the stage every year setting out a benchmark reference for innovation round the world. “It is a tool that can be readily understood both by public and private persons and operators, adopting a stance between micro and macro visions for innovation and its component parts”, says Bruno Lanvin, Executive Director of INSEAD’s European Competitiveness Initiative (IECI) and co-author of the report, which has been published since 2007 by Cornell University (USA), INSEAD and the World Intellectual Property Organization (WIPO) an agency of the United Nations. The Global Innovation Index reviews the main factors conducive to innovation and the performance figures for the 143 countries with respect to the criteria. Each year a special thematic is chosen: the 2014 Edition focuses i=ion the role of human ‘capital’ resources in the innovation process, throwing light on the increased level of interest shown by enterprises and governments alike to identify and stimulate individual innovator-creators and associate groups.

Innovation plays a key-role both for economic growth and for our well-being. Using this postulate as a starting point, and taking into consideration the multiple facets of innovation, the Global Innovation Index (GII) established a world rank for countries based on their level of performance in this area. European counties are well placed on the first 10 rungs of the ladder. Switzerland is at the top, for the 4th consecutive year, followed by the United Kingdom, Sweden, Finland, the Netherlands. The USA is N°6, followed by Singapore, Denmark, Luxemburg and Hong-Kong. Certain regional ranks can be considered surprising; Mauritius and the Seychelles are ahead of South Africa for sub-Saharan countries, Barbados ahead of Chili for Latin America and the Caribbean. What are the criteria? How is the world ranking systems consolidated? What trends can be observed? Why is France now only ranked #22 (a drop of 2 rungs)?

As far as the 2014 edition is concerned, the main challenge is to understand to what extent human resources can determine or delimit a nation’s capacity to innovate.

A holistic approach to understand the role of human capital resources in the innovation process

‘What started the Index was the fact that governments, entrepreneurs, were not talking the same language. With the GII, the idea was to offer them a measuring system to establish a neutral, tangible base they could refer to. Very quickly, the Index became an international standard which we improve every year. GII has survived the competition of other indexes, proposed by various consultant agencies, because of the highly rigorous scientific analysis and independence which is the trademark of the authors”, underscores Bruno Lanvin. As far as the 2014 edition is concerned, the main challenge is to understand to what extent human resources can determine or delimit a nation’s capacity to innovate. How do you go about identifying creatives and inventors to value-add to their profession and work? “We must understand what takes place at the frontier between an individual, technology, financial mean, public policies and the institutions. Improving skills remains of or the most important ways top progress in terms of innovation, productivity and economic growth, with the aim to also improve social

well-being and equality. The GII 2014 underlines the emergence of a complex thought, action and interaction process, among persons that evolve in their daily professional environment. The traditional vision of innovation, technology-intensive and oriented to production, is now moving to a more holistic line of thought, a system in which the key-role of individuals and work conditions must be recognized. Those innovations that prove successful also rely on input from social actors, from governments and consumers ... who will all be future users of the innovation under consideration. The human factor does not come to an end on the production line; quality and effects of results also depend on how innovation is accepted and disseminated.

Innovation correlated to GDP per inhabitant

In 2014, the list of countries at the top of ranking remained unchanged, even if some positions have changed among the group of the first 10-25 countries in the list. "There is a wide gap that will be difficulty to infill, witness the difficulty the least innovative countries have to keep up with the best raked economies. This can be partly explained by their difficulty to develop and retain the manpower resources needed to guarantee sustainable innovation", underscores the report. Bruno Lanvin sums up the conclusion: "there is a strong correlation between the GDP/ inhabitant and the performance level noted in innovative activities. However, in the middle ranks of the rating, the countries evolve in an interesting manner".

Infrastructures and attractiveness to improve human capital resources

The Global Innovation Index is the average value of two sub-indexes. On one hand, the sub-index of the means implemented in terms of innovation allow you to assess those elements in the national economy that favour innovative activities around 5 pillars: 1) the institutions, 2) manpower and research, 3) infrastructures, 4) market progress and 5) corporate progress. On the other, the results sub-index throws light on obvious proof of innovative actions based on 2 pillars: 6) knowledge and technologies acquired and 7) 'creative' results. As far as human factors are concerned, they can be seen as resulting from the infrastructures available and used (training, research establishments, etc.) that help increase the knowledge base and skills of a national population and enhance the attractiveness of the country, which results in the possibility to attract the best talents. Chandrajit Banerjee, Director General of Confederation Indian Industry underlined the policy thrust here in the USA (in terms of attractiveness) which led to higher levels of attractiveness, enabling the best minds and brains to pursue their 'innovation dreams" in the New World. Banerjee's message is clear: "To build up an innovation-intensive policy thrust, a country must train its populations as far as humanly possible offering the tools needed to turn their dreams into reality. Innovation will follow suit".

Centres of excellence, unchanged for 3 decades

To build up an innovation-intensive policy thrust, a country must train its populations as far as humanly possible offering the tools needed to turn their dreams into reality. Innovation will follow suit.

At first sight, consequently, the first 10 ranked countries in terms of innovation are all in the high revenue bracket. This, however, is not enough: there are high-level countries that are less well ranked and find it hard to figure among the top third of the list. The reason is that innovation is a multi-facet phenomenon, the combined result of lots of data leading on to a multitude of results. World leaders in innovation tend to have high scores in every criterion of the GII model. Switzerland, for example, is always in the top 25 countries, whatever the criterion, with only 4 exceptions among the 81. Moreover, and despite a global trend in R&D, the production of high-level scientific publications is concentrated in a small number of well-identified places. These 'centres of excellence' have practically remained unchanged over the past 3 decades. The top 10 leaders, according to the GII share the characteristic of having "well interconnected" innovation ecosystems, in which investments in manpower resources are associate with a solid infrastructure, which "favours a high level of creativity". The fact is that manpower resources cannot express their potential with the needed, adapted infrastructures. "Setting up a conducive environment, to feed, promote and develop human resources beyond economic and social innovation is a complex and critical task", states the GII 2014. California's Silicon Valley, often cited as an example, combines 3 determining factors: a high-level educational and academic structure, presence of risk capital and a market ready to absorb innovative products or process as soon as they leave the labs. "There are very few place on Earth", feels Bruno Lanvin, "that combine these 3 factors so well. But the Silicon Valley is not the only viable model and indeed there is no miracle recipe. In Europe, the ecosystem round the University of Cambridge produces results that are equally excellent. Hence the question, is it possible to create ex nihilo an excellent ecosystem. It has been raised for certain countries such as Qatar or the United Arab Emirates. These new ecosystems, because of their airport hubs, on a par with New York or London, are viable. This crossroads position (air and sea) also benefitted Singapore which is now far ahead of Manila or Kuala Lumpur".

Attracting and retaining talent

The infrastructures are all the more important that they can help avoid brain-drains to those countries that have better installations. Thus the GII 2014 confirms that there are still 'gaps' in innovation process round the world. As Bruno Lanvin stresses "Innovation now has an international dimension, and increasingly the emerging economies are faced with complex questions inasmuch as "bringing skills to bear" relies on a delicate balance between an exodus of talents (nationals leaving the country to follow further training elsewhere) and an influx of talents (when the best come home to innovate and create jobs and the diasporas that contribute to the national economic competitiveness)". In a global economy, States are now competitors, just like enterprises to attract the best talents around. Economists have made progress in their understanding of the consequences of professional 'migrations'. Recent research has shown that 75% of the innovators who migrated from low or medium revenue countries live in the USA; they originate from China, India, Russia, Turkey, Iran, Rumania and Mexico. The Moroccan diaspora is for 32% in France, 20% in Spain, 12% in Italy and 3% in the USA. These 'emigration' countries are now seeking to reverse the brain-drain to retain where possible their national talents and even attract other nationalities. The perception of the "brain drain" phenomenon by economists and public authorities is also

Dispaora networks have ben envisaged by enterprises and governments as a bridge between the "insiders" and the "outsiders", who possess a technological know-how and a financial capital – all of which are needed for the innovation process.

evolving; it is less and less seen as a dry loss, but could provide a base for a 'mobilisable' world network, provided the necessary social, technical and institutional links are implemented. Dispaora networks have ben envisaged by enterprises and governments as a bridge between the "insiders" and the "outsiders", who possess a technological know-how and a financial capital – all of which are needed for the innovation process. There are vivid proofs of the positive impact of the diasporas on the direct foreign investments in the country. But, to date, efficient pro-attractiveness policies to recall the emigrated brains are few and far between, as are those that demonstrate successful degree of implication of the diasporas in the innovation processes of the originating counties. Thus, the United Arab Emirates have been very efficient is attracting international experts but far less successful when it comes to retaining them and their services. "Quality of life-style is a key-factor to help retain talents in the country. The arrival of the Louvre annex in Abu Dhabi, or the Guggenheim contribute largely to improving the local life-style and level. It improves the 'trademark' and shop-window effect encouraging others to follow and to retain their innovators", analyses Bruno Lanvin.

Hence the question, is it possible to create ex nihilo an excellent ecosystem ? It has been raised for certain countries such as Qatar or the United Arab Emirates.

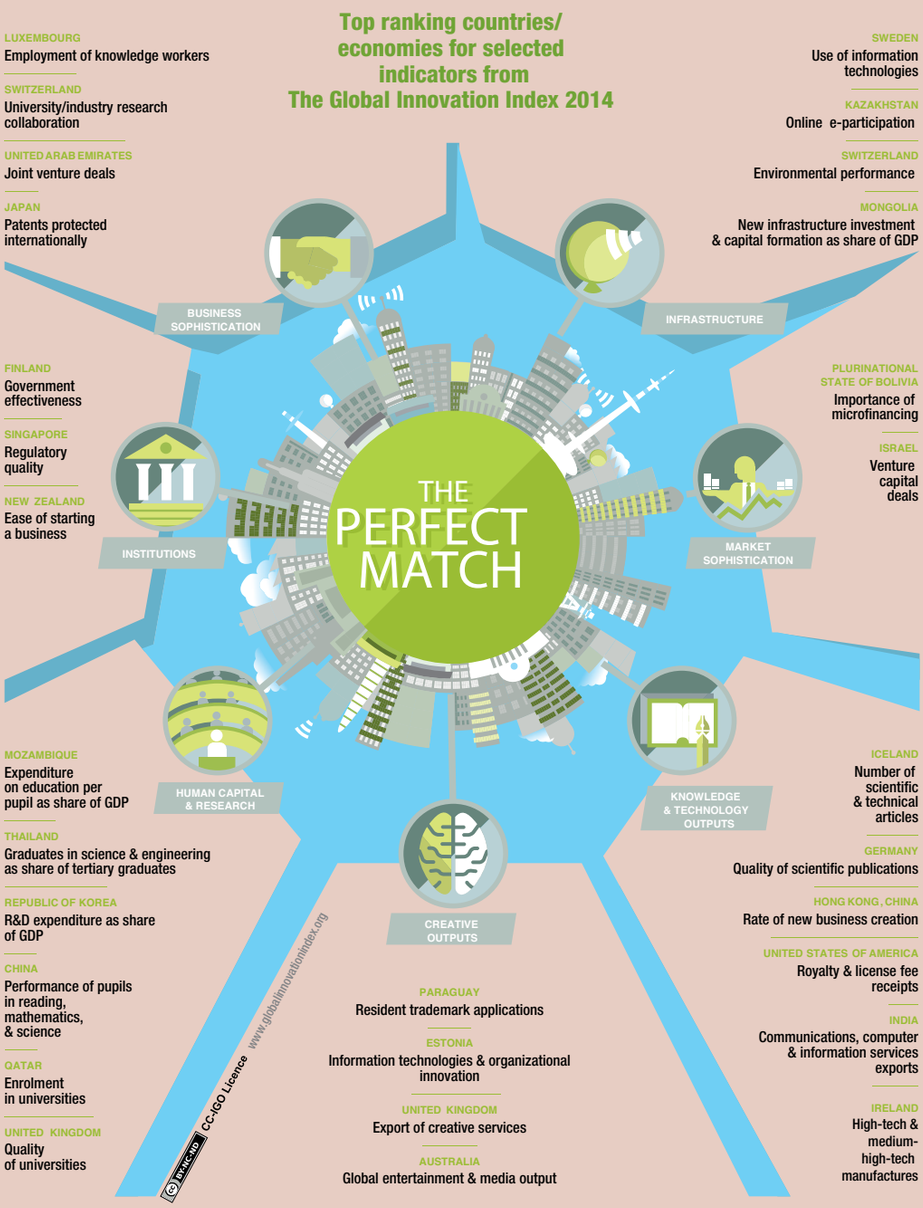
A ceiling for innovation in Brazil, Russia, India and China (BRIC)

The GII 2014 demonstrated that China is now a 'good pupil', moving up 6 rungs this year (at 29th) and is now in a comparable position to numerous high-income countries. First place in the group of medium-high revenues, China now rates as a country among the "innovation apprentices", i.e., low revenue countries that show results at least 10% higher to their equivalents, in terms of GDP. The "innovation apprentices" are registering improving results in innovation thanks to improvements in their institutional framework, in the skilled manpower with a better access to higher education courses, in better infrastructures, in a more marked integration in the investment and world trade credit markets and in a modern commercial environment – even if the progress recorded in these areas is not of a homogeneous level everywhere. "In the BRIC states, the spectacular progress notes over the years 2009-2012 have levelled out over the past 2 years", notes Bruno Lanvin "and it is the human factor that explains (in part) the levelling phenomenon. Education, for instance, is facing up to enormous challenges: if we take just the case of India, there will be a need for a million teachers (lecturers, school-teachers), from primary schools up to the university. It will take a generation to close the gap. The Indian innovation performance will continue to grow, but at a slower pace than would have been the case if education were in a situation to accompany growth".

Unlocking and renewing innovation

The consequence is that the challenges are not the same in emerging economies as in 'mature' economies. "Emerging countries face bottlenecks and hurdles that strangle their capacity to innovate – problems such as education. In mature economies, the challenge now is to renew the levers for growth, after the successful period known as the "Glorious 30 years". They must be replaced by high technology content services, where innovation is the driving force. European economies will be in a position to renew with a growth rate higher than 2% without high performance innovation policies". Bruno Lanvin insists on one point: to reach this level of performance, there must be policy decisions in favour of truly pluridisciplinary training. As an example, he cites the University of Aalto, Finland where pluridisciplinary is a prerequisite. An undergraduate in computer sciences, for example, must choose minor subjects in design and business. "In Singapore, the local authorities were quick to realize the added value of this approach. Today the 'diploma-award' courses are becoming uniform, between business schools, design and engineering schools. What we need in Europe is to implement a dynalmci inter-sectroail approach to improve European integration. Let us imagine a school of engineering in Compiègne, a design school in Barcelona and a business college in Milan, all agreeing to offer a joint diploma under a common flag and the credo "innovation".

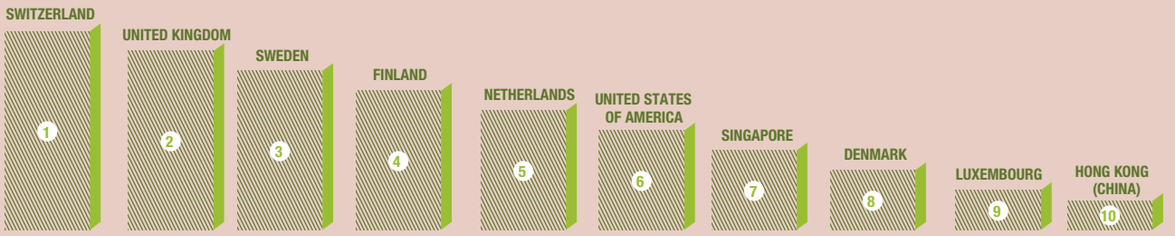
IN A PERFECT WORLD FOR INNOVATION, WHO WOULD DO WHAT ?



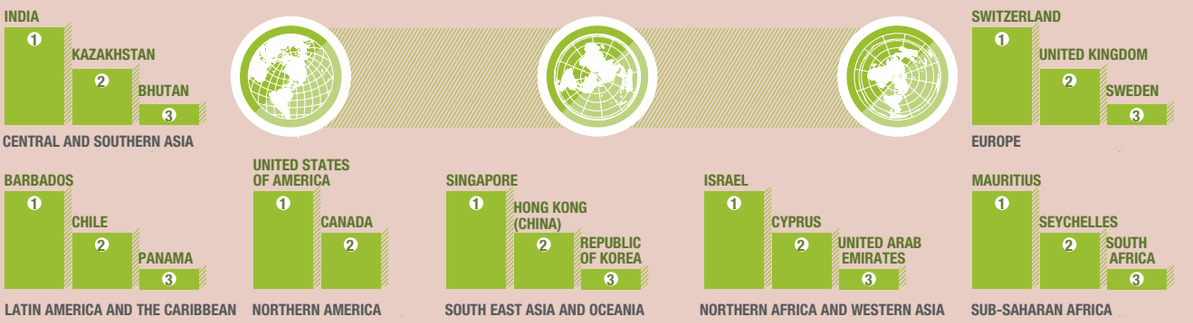
WHO IS LEADING INNOVATION?

Every year, the Global Innovation Index ranks the innovation performance of more than 140 countries and economies around the world. The ranking is based on 81 indicators.

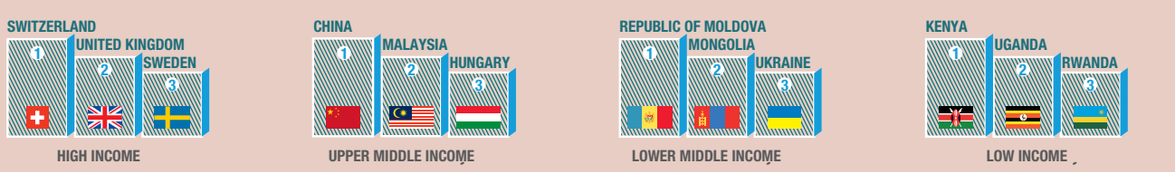
World's Top 10



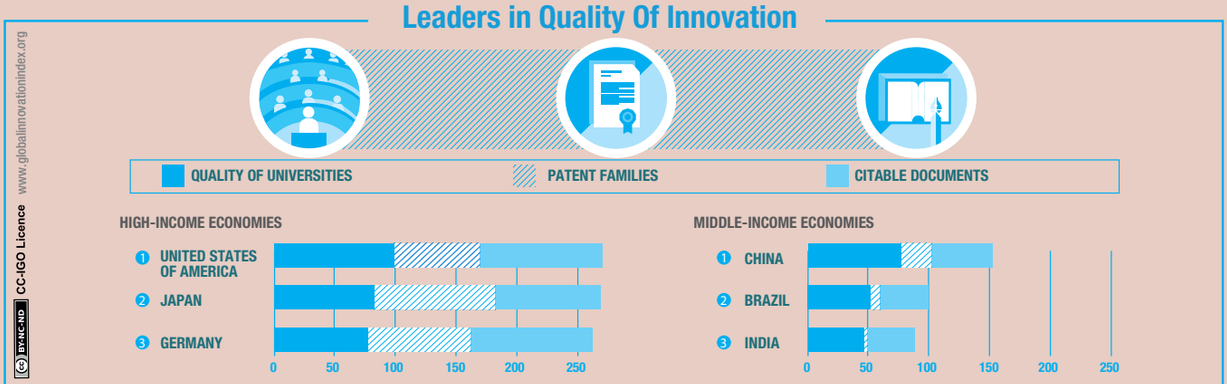
Top 3 Per Region



Top 3 Per Income Group



Leaders in Quality Of Innovation



In favour of a European intersectorial dynamics

Bruno Lanvin underscores that the bases of this vision are already there: the European Erasmus programme has already institutionalized the exchange of students a d staff. In the GII top ten we find seven European countries: the question might be "Why do we have Minitel® and not Steve Jobs. One of the answers lies in the cafe syndrome. On an American campus, a student in electrical engineering can lunch alongside a specialist in religious studies and a meteorologist, expert in Southern hemisphere weather. We must channel this sort of serendipity and create a real interdisciplinarity campus" advances Bruno Lanvin. Another cultural point is the way we look at 'failure'. In the USA, people learn from their errors and failures. In Europe, an entrepreneur who runs into an initial failure will then find it difficult to create a new business. "To counter this phenomenon, Finland celebrated every year a National Failure Day!"

Encouraging the spark

A third European handicap is the lasting imbalance between training courses offered and the job market, with a vivid paradox – 26 M unemployed and half a

million jobs with no takers – and this is only for the computer science and applications sectors … "The place for women is also problematic: they do better in scientific specialties up the baccalaureate level but the students in the engineering schools are largely a majority of men. European culture leads to a sub-optimal use made of its potential to innovate and the glass roof over women is thicker in technology than elsewhere. To value-add to this potential, we must 'emasculate' certain professions", adds Bruno Lanvin. And how could France improve its rating? Currently, it is in 15th position as far as manpower resources and research are concerned. "In France, there is a gap between quality of brains and its translation in economic terms. This is due to the weight of regulations, notably in the labour market. In contradistinction, tax measures are not as discriminating as we might believe and some such as the CIR (tax rebate for research investments) are welcome and make common sense. But above all else, what is missing in France is not optimism but enthusiasm. We recall that etymologically, enthusiasm is the messenger of the gods. Innovation, is closer, in a sense, to alchemy than to chemistry. This irrational dimension is essential. Personally, I believe in the value of sparks, in surprises that spring from nowhere and create breakthroughs between the world today and the world tomorrow." ■

> Let us imagine a school of engineering in Compiègne, a design school in Barcelona and a business college in Milan, all agreeing to offer a joint diploma under a common flag and the credo "innovation".

DIPLOMA SURVEY

European competitiveness :

the key is innovation

Javier Gimeno is the Academic Director of the European Competitiveness Initiative at INSEAD (Fontainebleau), initiated in 2012 and grouping together some 30 research scientists working on our understanding and improvement of the conditions underscoring Europe's level of competitiveness via polls, reports, case-studies, etc. "Innovation is the key to competitiveness" asserts Javier Gimeno.

The investigations that comprise this Initiative focus on enterprises, public authorities and the public at large.

The first opinion poll addressed to 45 000 INSEAD graduates focused, for example, on their perception of the pros and cons of the European Union and the United States as "pro-competitiveness lands" for enterprises. "Our alumni hold high responsibility positions in the major businesses and their opinions are drawn from a fine, global vision. We are now preparing a second poll in connection with attractiveness or not of the European Union", announces Javier Gimeno. The first poll was carried out in collaboration with the University of Harvard (US), the latter questioning its own alumni, led to some interesting results. On either side of the Atlantic, there is an equal defiance of the economic world with respect to politics. Globally speaking, the Old and New Worlds share the feeling that the politicians do not meet the challenges of our economies. From that point in common, we then proceed to explore the divergences.

Financial and labour markets are more reactive in the USA

The European Union is recognized for its high-level training, notably at college and university level, for the visibility of its legal and judicial framework, as well for the extent and reliability of European infrastructures (telecomm, transportations, etc.). In contradistinction, in the USA we can note three areas that are essential if we want a dynamic economy: "The reactivity of its financial market, the high flexibility of its labour market and its pro-entrepreneurship culture. Consequently, the USA is conducive to innovation", summarizes Javier Gimeno, adding some finer points too: "In the USA, the investment funds, the capital riskers, the stock exchange, etc., enable money to circulate very rapidly and to benefit recently established companies (start-ups) with promising innovative policies, different from what we see in Europe where globally speaking the banks play the main role and lack singularly in reactivity and courage and it is for these very reasons that European companies tend to raise their needed funds in the USA". The other drawback for the EU lies in the very protective labour market compared with the US situation, where engrained flexibility allows managers to hire and fire staff rapidly. To the extent that companies must be able to react to a changing environment, equally in phase with growth and with decline, the US markets are more favourable. "The companies that succeeded 30 years ago are not the same today. One must be able to manage the pay-roll to have a best fit with needs to 'survive' and not engender a threat to existence of the company even if, as seen from a European stand-point, the US market-places are excessively liberal", underscores Javier Gimeno. The third noteworthy difference stems from the first two; a pro-entrepreneurial spirit. The American continent appears far more conducive to creation of businesses, given the facilities to hire personnel and to raise capital. "Those of our alumni who want to set up their own companies generally look to the USA for their resources, at least to raise funds", concludes our research scientist Gimeno.

"Switzerland concentrates on high added value sectors. The country combines the strengths of the USA and the EU.

The EU has been losing ground since the 1990s

These three factors in the USA lead to a more reactive, more competitive economy faced with innovation. Javier Gimeno identifies large-scale on-line purchases – much more prevalent and far-reaching in the USA than in Europe – as a proof. "The European Union has not been able to keep up with the rhythm of ongoing innovations. Ever since the 1990s, the pervasiveness of Internet, and high-paced globalization, Europe has fallen behind. And this is still a challenge today: how can we in Europe get back in stride with productivity gains such as we can observe in the USA? While European authorities are aware of this challenge, they are not implementing (or with difficulty) the tools needed. Moreover, where the Member States are concerned, there is a problem of alignment/coherency of national policies face with innovation issues", analyses Javier Gimeno.

France: an excessively "top-down" vision

We must be nuanced to understand the situation correctly. Thus for the past few years, Switzerland has been first in the Global Innovation Index, thanks to its successful combination of an adapted environment, to its high quality infrastructures and very high levels of investment in innovation. "Switzerland concentrates on high added value sectors. The country combines the strengths of the USA and the EU. The United Kingdom – thanks to adopting an 'Anglo-Saxon' labour market policies, as in the Scandinavian countries, is very attractive in terms of its innovation eco-systems", underscores Javier Gimeno. So how does France stand? Despite its very high level of education and research activities, financially supported by public funding, France still suffers from an excessive "top-down" vision, often disconnected from corporate expectation and needs. "Our [INSEAD] alumni appreciate the support that public authorities distribute to research activities, but at the same time they regret the difficulties that are inherent in any desire to innovate, that stem from the inertia of the labour markets; this deters numerous international companies from investing here", underscores Javier Gimeno, for whom innovation and competitiveness are closed related.

The European Union is recognized for its high-level training, notably at college and university level, for the visibility of its legal and judicial framework, as well for the extent and reliability of European infrastructures (telecomm, transportations, etc.).

Protect persons and not jobs

"Innovation is a guarantee for long-term competitiveness. The capacity to create added-value in an open economy, i.e., the capacity to innovate, is the best way for any company to become and remain competitive. Seeking competitiveness is precisely the opposite from adopting a policy reducing salaries: it lies in the capacity of individuals and companies to create more value. High level salaries indeed are a good proof of excellent corporate competitiveness", asserts Javier Gimeno, who pursues, "If an active population evolves to higher, better qualified positions, it will be a good thing and often the result of better education levels. By contrast, if industrial jobs are eliminated and only lead to unemployment, then we have a problem. "That is what is happening in France, where the trade unions jobs more than persons. If an enterprise is no longer competitive, one must not try to save the jobs, but train the personnel to take up new positions. The French labour market should reorient its policies to tackle question of reconversion, as Denmark is doing".

Three years that will be crucial for competitiveness

As Javier Gimeno sees it, the next three years will be crucial for Europe's level of competitiveness. "The European Commission tend to align itself increasingly with the European Parliament, which per se is excellent for institutional democracy. But the anti-European parties are gaining influence in each Member State, which can be detrimental to attaining better European integration and hence could be an obstacle to drafting a common European policy in favour of innovation. I personally hope we shall not go down that road." ■

PREVIEW

If you want to survive: innovate

Innovation must be the result of a continuous research process in order to produce long-term results. So, how can we ensure this? Hubert Gatignon (INSEAD, Fontainebleau), David Gotteland and Christophe Haon (School of Management, Grenobles) have written a book that provides a solid academic basis and an excellent overview and synthesis of associate scientific research, under the title "Making innovation last: strategies for sustained growth" . The book will be published in the 3rd quarter 2015. Hubert Gatignon answers some stage-setting questions from "Interactions".

Hubert Gatignon introduces the topic: "Innovation is the source of growth for both developed and emerging economies. Enterprises must innovate more, going beyond the much-bandied vision of 'incremental innovation'. There can no longer be a solution in carrying out small improvements on a process, a product or a service in order to prolong one's activities, but rather one must implement continuous, long-range innovation policies." Striking a balance between verifiable scientific research and wild generalities issued by innovation gurus, the co-authors give an up-to-date overview on theory and practice, validated through high-level analyses and investigations. The book is the results of four years'' work.

A state-of-the-art overview on research into innovation

"What we wanted to achieve was a synthesis of research to date on the subject, to provide scientists with a clear vision of the paths that still remain to be explored if we want to fully understand the innovation processes, and innovative practitioners with the bases necessary for the establishment of a business strategy", says Hubert Gatignon. Two aspects of the book will be of particular interest to these practitioners, viz., companies engaged in an innovation-intensive policy: the book analyses logically the research carried out in this field. It also provides scales and indicators with which various stages can be assessed, leading to adopting and pursuing a sustainable innovative policy. There are 4 main sections: understanding innovation, the organizational context, the processes needed to create innovation and how to launch an innovation on the market-place.

From technology to marketing, not forgetting management aspects

"Innovation must be seen from a combined technological and marketing point of view. Technology evolves very rapidly to the extent that there are no frontiers now between sectors of activity. We must acquire a global vision of the evolution. On the market-place, we must understand the reactions, the behavioural patterns, the consumer's expectations and those of users", emphasizes Hubert Gatignon. For this, the consumers themselves are increasingly solicited to contribute to the innovation processes. But how can you integrate them in an efficient manner? How are you to rapidly assess novel concepts? The way new products and services gain a part of the market and circulate, today take increasingly complex routes when it comes to identifying them and controlling them, when viral marketing is 'on the road'. "This constitutes a new challenge for the enterprises: how are they supposed to work with the consumers? How do you take into your stride the network communities and the user groups, given the high speed with which they react and interact? The business world must adapt to the new uses and not focus too narrowly on their businesses per se? They must stay open to accept and face competition and a changing market-place." What we now see is a new approach to the way teams are built: who should work with whom and how are they grouped together? Should they integrate external staff on, on the contrary, try to stick with more homogenous internal teams. "There are very few studies that confirm the efficiency obtained by operating in a 'start-up' mode insider a major company structure", explains Hubert Gatignon, who emphasizes, "There simply are no miracle recipes when it comes to modern management."

For this, the consumers themselves are increasingly solicited to contribute to the innovation processes. But how can you integrate them in an efficient manner? How are you to rapidly assess novel concepts?

Innovation life expectancy : 6 months!

New business models are also arising, for instance 'crowd-sourcing' and 'open innovation'. The question is – how are we to collaborate with these new practices. "The logic of open innovation runs counter classic commercial logic. Economic models evolve, even if a lot of novel construction is still needed (apart from a few experimental trials). There are questions that call for solutions, such as intellectual property rights", notes Hubert Gatignon. These new challenges must be faced by both the developed and the emerging economies. "Today, it has become very difficult to protect patents in a long-term vision: benefits no longer accrue from innovation, apart from several sectors protected by the regulators. Companies in developed countries must innovate continuously, failing which the simply will not survive. Emerging countries are doing better because they are also the most innovative, both on their domestic market and in export!" underscores Hubert Gatignon. Various studies have shown that competing companies can react very quickly, often inside 6 months following the launch of a given product or service, sometimes by even adding the very same innovative improvements.

New tracks to explore in terms of public-private partnerships

The book is designed to have a pluridisciplinary approach: answers to various problems are to be found in technologies, in management stances, in partnerships, etc. "Very few publications cover all these points and prospects. Where alliances are concerned, it is important to analyze the case-studies of positive alliances and those that we might qualify as 'dangerous' and 'opportunist'. The theory of transactional costs provides an excellent normative base for discussion. Public-private partnerships are now increasingly common, but have not to date been sufficiently studied". Among the alliances, those with the university institutions and their research scientists are of paramount importance. "In this respect, UTC is a good example! But the connections and relationships between enterprises and academic research establishments have yet not been analyzed sufficiently and relevant theories are rare", concludes Hubert Gatignon. ■

What exactly does innovation mean?

Professor Jean-Michel Besnier lectured on philosophy for 15 years at UTC when he was Director of the Social Sciences Department, up to year 2000. With his a doctorate in political sciences and an 'agrégation' in philosophy, he now holds the Cahir of Philosophy of communications technologies at the University of Paris-Sorbonne. Here is the analysis he offers on the meaning of innovation.

What does innovation tell us about our relationship to the world?

In order to imagine we can innovate, we must first see the world as being incomplete. This was a postulate I defended and developed in a working party (WP) in 2009 at the French ministry in charge of scientific research, when we are preparing a framework for a National Research Strategic Plan (SNRI). My line of thought, which was included in the SNRI programme general introduction made a distinction between two ways to view the world. The first vision that we have inherited from the early philosophers assigns a predestined place for everything in our universe and that technologies express our wisdom to discover and preserve them the places. The second vision, the modern view considers that Man lives in an open world and that technologies must explore every possible option. Innovation, in this light, becomes a promethean expression; Men in their demiurge ambitions wants to finish the world and to reveal what does not yet exist, using technologies. These two visions coexistent in our minds today. The wisdom of the Ancient philosophers led to instilling ethics in seeking the appropriate 'place' for all things. Today we realize and accept that this 'place' does not in fact exist and moreover we need to discuss and debate matters to orient as best we can our coexistence as human beings.

How do you analyse today's desire to innovate whatever the cost?

The French national 5-year plans, the Planning Commissariat General itself, have been repealed and disbanded, notably because they conveyed a top-down authoritarian (totalitarian) connotation. Today, innovation is presented as a definitive horizon to the prosperity of our individualistic societies, slipping from a stance inspired by Lamarck to a more Darwinian position. Lamarck's 'adaptationism' could have justified a programing logic: scientists seek to answer the needs expressed by society and supplies a specification that covers the needs. Darwinian evolutionism takes another path: it is not society that drives innovation but the arbitrary activities of Men themselves and their inborn genius. Our techno-scientists continue to produce innovations that do not necessarily correspond to expressed needs and we find them in the market place, regardless of whether there are potential buyers or not and the selection operates. From this point of view, any and all innovations are worth pursuing – the resulting value will depend on the capacity of the innovation to coincide with societal dynamics. The large degree of 'luck' involved explains why we applaud 'serendipity' why we ignore the question of the finality of the innovating to accept profit-making in marketing and agronomy. This hold true in every sphere, including the health sector. We want to live a thousand years whatever the price to pay and we welcome anything and everything that follows this path, while running the parallel risk of downgrading our values and the symbolic dimension that are characteristic of a truly human existence.

Any innovations are worth pursuing – the resulting value will depend on the capacity of the innovation to coincide with societal dynamics. The large degree of 'luck' involved explains why we applaud 'serendipity'

How would you explain the tough opposition we see to breakthrough innovations (nanotechnologies, GMOs, synthesis biology, etc.)?

All of these innovations open up eminently striking perspectives from a metaphysical point of view. At a nanometric level, for instance, living matter is hardly different from inert matter, nor are humans so different from animal, vegetable or mineral realms. The distinction living/inert which proved so structuring for the way we think no longer has any meaning and his allows scientist and engineers to manipulate the matters. This position is defended by theoreticians of synthesis biology, who have no qualms at all in announcing their aim to create a form of life without DNA, or the production of hybrid creatures, a mix of biology and applied computer sciences! Our digital and digitized culture has now led us to see ourselves as akin to flames circulating in cyberspace (as Pierre Lévy was wont to say), and comforts the euphoria that greets innovations that will in fact be the ruin of substantiated identities.

What would you consider, if it were to exist, as an ideal innovation?

By definition, innovations cannot be foreseen. But by way of contrast, we can consider and ask ourselves what would be the conditions necessary and sufficient to see what we want emerge. From this stand-point, politicians should be prepared to accept that the civilian world take part increasingly in research programming, so that the innovations that science produces cab be perceived as beneficial in a shared vision of the world. Steps have been taken in this direction at the Inserm (health research), or at Inria (computer sciences, control and automation) where I was a member of their ethics committee for 8 years. These research establishments are exemplary in this sense. The members assert their refusal to lose control as some techno-prophets suggest; Hanah Arendt indeed saw a time approaching when engineers would define themselves as people who seek to be surprised by what they are capable of doing instead of setting their efforts and time to carry through chosen, debated subjects. It nonetheless remains true that these ethics committees that would aspire to moralize technology most often are opposed to the logic underpinning political and economic deciders. At the time of the public debate on nanotechnologies, I was posted at the ministry in charge of Research where I defend the thesis that there could not be a moratorium here, inasmuch as international competition would not allow us to waste any time on wondering if civilian society felt that this new nanoscience (down at the 10-9 scale) was justified … the sole value that was to be admitted by policy-makers whether there would (or would not) be an added value in the applications, and this occasionally ran counter to what the public at large was feeling. ■

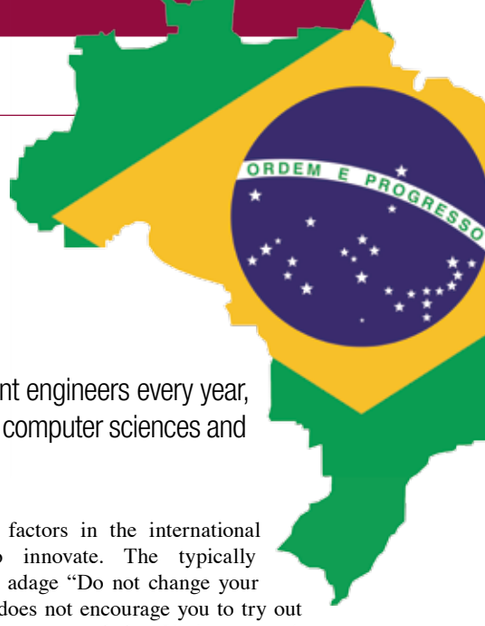
DID YOU KNOW THIS ?

80% of the persons polled say that innovation has improved their life-style in the past decade.

79% of the persons polled think that creative or breakthrough attitudes lead to innovations.

Only 32% think that the structure in which they are working currently contributes efficiently to innovation.

GE Global Innovation Barometer 2014



ANOTHER POINT OF VIEW

From Brazil to Compiègne

Thanks to its innovative training courses, UTC welcomes and matriculates 750 non-French student engineers every year, including many from South America. The Brazilian Yuri Gomes de Abreu, in the specialty elective of computer sciences and applications, tells Interactions about his personal reactions after his fresher year studying at UTC.

"UTC allowed me to choose my own cursus composition, no matter how strange it may have seemed", says Yuri, who came to France in 2014 from the State of Belém do para, in North Brazil. With an excellent training already in telecommunications, as a qualified theatre technician and engineer-manager, he felt he could learn more to work in the show-biz world. "To optimize the management techniques I learned in Brazil, I decided to come to France to pursue studies in computer sciences, especially in the domain of data mining and analysis". The courses offered in Computer Sciences and engineering applications and the specialty Data Mining and Decision-making Processes (FDD) corresponded perfectly to the desire of Yuri to gain from polyvalent, open add-on training. This UTC specialty offers students the statistical culture and mastery of data analytical tools used as aids to decision, and it can also prove interesting for public management or artistic projects. "Intelligent computer aided public lighting control, for example, is mix of computer sciences, light engineering and data handling. It enables a more expressive combination of arts and technologies as used by Disney Resorts or le Cirque du Soleil" says our enthusiastic Yuri, keen as he is on sounds and lights.

A living campus

It is never self-evident for a non-French student to fully integrate a new French HE environment. Yuri Gomes de Abreu experienced this when he arrived at UTC. "Just as happens with every foreign student exchange programme, the first phase is difficult because we have to adapt to the local language" Yuri recalls. But the vitality of the exchanges he enjoyed allowed him to quickly integrate his new universe. "Associations in France are so lively and allow you to have incredible experiences because of the way and speed with which ideas and development projects circulate, and because of the possibilities offered to entrepreneurs", says our your student, full of ambitions. Freedom of speech and confrontation of ideas not only seemed a splendid solution for social integration but also as conducive to creative work. After a year's free contribution, he became President of the association Light Pole Decibels, which organized "son & lumiere" shows.

Habit and inertia

While Yuri is enthusiastic about his student life in Compiegne, he is more than disappointed by certain habits, viz., ways of thinking that he feels are inertia-ridden. "Innovation in France is still an objective to be attained a not a habit", he feels. As he sees it France is still suffering from numerous braking factors in the international race to innovate. The typically national adage "Do not change your habits" does not encourage you to try out new ideas ... concludes Yuri, tongue in cheek. "My friends in Compiegne also rely on the principle that everything is forbidden unless it is expressly authorized, whereas the exchange students assert that everything is allowed unless there is an special interdict", he adds, implying that this is simple fact. As he sees it, problems start piling up at the beginning of the chain, with a form of work organization that does not encourage creativity. "The highly structured environment in which work is accomplished does not offer sufficient degrees of liberty to create". Where Brazilians focus on the innovative concept, the French tend to focus on methods and this destabilized Yuri Gomes de Abreu on several occasions "The need to be precisely explicit about how one is going to implement an idea rather than explain the objective took me several times down the wrong road". At the age of 24, Yuri feels that the numerous tests and validating stages needed in our work methods slow down the entire creative process. This phenomenon also impinges on the relevance of technologies with respect to recent evolutions. "In France, one can always find an excellent technology but it is slightly out of line with the need that led to its invention", Yuri concludes. ■

ARTS & TECHNOLOGY

'Sons & lumières' for the Earth's Climate

The Conference of the Parties to the UN Convention on Climate Change (COP21) will be taking place in Paris in December 2015. In order to mobilise our awareness in a game-mode, the UTC students will propose a beautiful SON & LUMIERE show for Compiègne.

Six years after the 'flop' of the Copenhagen Climate change conference, the next COP will take place in Paris in December 2015. It will provide a new venue to negotiate and hopefully conclude a new International Treaty on Climate Change to replace the Kyoto Protocol. UNESCO has also named 2015 as the "Year of Light. This coincidence led Yuri Gomes de Abreu, a Brazilian student registered at UTC and President of the Association 'Light Pole Decibels' to propose a 'complete' SON & LUMIERE show. This 'total' show will go beyond the limit of the University and will see the citizens of Compiègne participate, no matter their age. This challenge will mix music, light, theatre, dancing and video projections. The event will be handicap-friendly, just one sense (ear or eye) will allow you to follow the show. "In other words, it is a 'united' project sharing the event, all for one and one for all; in short a totally artistic happening", explains Yuri. The "spectacle des lumières" (title of the show), subtitled: "how it would have been impossible to discover fire on the Internet", will set out the key steps of Mankind's technological progress. The innovative concept, to blend art and technology in the show is a good illustration of the dynamic-creative trademarks of UTC and its students. It also pays homage to the identity of the City of Compiègne and it history in a partnership with the Association 'Compiègne Ateliers Souvenirs'. Financially supported as it is by the FSDIE, this project would not have come to be with the conjunction of numerous talents and skills. « « The main objective has always been training and handing on knowledge. Since I react well to challenges, I thought about proposing a project that would set all practically all the knowledge we possess", explains Yuri. Students in management studies, musicians, dancers, actors, sound and light engineers, video technicians are all UTC undergraduates. "It is a project that allows each of us to use and demonstrate his or her skills", he adds. The show will fit the UTC identity and that of the association 'Light Pole Décibels. ■

plus d'infos Le Spectacle des Lumières - L'histoire de l'impossible : **http://webtv.utc.fr** > Notre quotidien > Culture, arts et sports

3-D

Art & Technology,
3-D, a path for innovation

The theme of this year's 'Composite Festival' (18th edition at the Espace Jean Legendre, March 17-April 17) was "3D makes the virtual world real". The event offers a real forum for an exchange between live arts, visual and digital formats … and brought together some "passionate actors and visitors", as Charles Lenay, UTC professor of philosophy and cognition sciences, put it. He addresses these visitors at the March 17 opening ceremony.

Professor Lenay's talk analyzed perceptive substitution and emotional content, as well as the phenomenon of "immersion" in 3D imaging. As he sees it, 3D per se constitutes a meeting-point of technology and art and wonders "What does 3D – viz., our day-to-day experience - become when we employ a mediation technique to recreate it? Whether this is done using a virtual reality (VR) set-up or a perceptive substation, the technical mediation does raise the question of creating a world that adapts and corresponds to the an individual's possibilities (to act and to feel). The conditions needed for a 3D enactment rely on having a listing of actions and sensations that are made available, beginning with simple movements like 'forwards', 'backwards', 'turn completely' ... all of which contribute to the sensation of image-depth".

Building an aesthetic frame: the challenge of functional success

The other relationship between an art and technology lies in the functional success (or not) of the set-up. A technical tool needs to be more than just efficient if we want people to adopt it. We must therefore build an aesthetic frame, a system of values, desires and expectations, preferences, without which the set-up (product, service, process ...) simply will not attain its social aims. Charles Lenay is working on the concept of perceptive substitution for the blind. "How are we to create an aesthetic frame, an emotional perception of the world and create a feeling faced with new characteristics that come with a new perceptive substitution? The person concerned must feel something, an interest, or be indifferent. Art here lends a helping hand: a piece of art-work does not spell the end of 'looking', or 'listening' and every time you meet it creates a new dimension. This is characterized by what we call a dynamic perception, enriched by everyone who looks (or listens)". Prof Lenay insists here on the design features that tie in naturally with the technical aspects, industrial manufacturing processes, uses, interactions and with the artistic content. "This is a critical, natural approach in artistic work, which questions the beauty and practicality, the aesthetics and the functions offered. The value assigned by a user to an object is primordial here", recalls Charles Lenay.

Art seen as an integral part of research activities

Charles Lenay noted, during this national forum, some very interesting talks related to the sound aspect of 3D work, which is rarely singled out and not used very much – an example being the work by Chihiro Minato, exhibition commissioner at the Art Triennial, Aichi, Japan. "What he achieves is really splendid. He even managed to send one of his works into space – becoming the most distant work of art from the Earth. The interest here is that it is the results of work conducted by the students themselves. From our stand-point, we must associate the UTC undergraduates increasingly when it comes to choosing the subject matter and the organization for the Festival" he suggests, while observing that there was only a limited number of students present at the debates and meetings. This he sees as an important question to the extent that art conveys levels of worry, concern and questions, redefines the criteria that subtend aesthetics, in a constant search for new relationships to the world around us. "This constitutes a self-contained research field, inasmuch as innovation must be sought constantly and that art is a contributing factor".

Épatez la galerie : a highly successful blend of art and technology

That is why Charles Lenay spoke so positively about the event *Épatez la galerie* at the Higher Education and Research Days (March 19-20). *Épatez la galerie* is an annual venue that brings together students from UTC and the Parisian Ecole du Louvre, for what must qualify as a very special visit to the Château de Compiègne. In pairs, the students propose a special discovery tour of the Chateau, with artistic and technical aspects. "Diversity of vision is essential. This event is a reminder of the 'Séries de Compiègne' that were organized by Emperor Napoléon III, in the form of interdisciplinary meetings at the Chateau that could last for days, even several weeks on occasion, with artists, politicians, scientists … This is the logic that underpins today's *Épatez la galerie*, which met with enthusiasm and real interest expressed by all present at RUE 2015. "The essence of the challenge is to induce, encourage and maintain student involvement – if the students come, then a terrific success can be guaranteed each time". ■

plus d'infos 18ème Festival des Composites
http://webtv.utc.fr > Notre quotidien > Culture, arts et sports

Épatez la galerie 2015

May 27, 2015
7:30 pm to 11 pm
at the château de Compiègne

http://webtv.utc.fr > Notre quotidien > Culture, arts et sports

WORKSHOP

'New energies' meet up in Singapore

February 4-6, Professor Guy Friedrich, UTC, Director of the UTC LEC unit (electro-mechanical engineering) took part in a workshop of renewable energies organized in Singapore by the CNRS, by the French Embassy to Singapore and the Nanyang Technological University. 20 Singaporean and French scientists, as well as several representatives of the major French industrial groups exchanged at this international forum.

Drawing energy sources closer to each other

During the 3 day conference held at the Nanyang Technological University, the Singaporean and French research scientists met to hear and propose state-of-the-art of solutions that could lead to a less energy-consuming future, a minimal consumption of remaining fossil fuels. Marine and wind turbine generators, the most recent photovoltaic panels, buildings and intelligent networks ... all contributed to outline an exceptional panorama of technological progress appertaining to future energy procurement policies. "The way we shall develop new solutions calls for a wide range of scientific specialties, running from mechanical engineering to chemistry and including electrical engineering, electronics and materials sciences and engineering", summarizes Guy Friedrich who presented an overview of the advantages to be found in French research and industries in terms of hybrid and electric cars. The most advanced French laboratories were also present: the CNRS, the CEA (Saclay and Grenobles), the major engineering schools (Centrale-Supélec, Institut polytechnique de Grenoble) and the Universities (Sorbonne Universities Cluster, Corte, Montpellier, Perpignan). With the aim to promote its international reputation, the Sorbonne Universities Cluster – with its 11 member institutions – was represented by Guy Friedrich from UTC and Christelle Laberty from the University Paris 6 (Pierre & Marie Curie). The 3 industrial sectors, energies, buildings and automobiles also took part in the exchanges, with the participation of representatives from Alstom, GDF-Suez, Bouygues Bâtiment International and PSA Peugeot Citroën. Another objective was imagine new scientific and industrial medium and long term collaboration schemes between France and Singapore, who are already close partners in the field of nano electronics – there are two joint CNRS laboratories on this theme installed on the 'Island State' (Singapore). Following this forum and its contact possibilities, several Singaporean scientists have received invitations to take part in various workshops in France over the coming months, one at UTC and another at Amiens (Picardie).

UTC at the core of tomorrow's transportation systems

At this Singapore conference, the UTC mechatronics' expert had the opportunity to insist on the added value of the laboratories and French industry to face the technology-related challenges that will face a changing world automobile scene in coming decades. "According to the European Union sectorial forecasts, by 2050, hybrid cars and all-electric vehicles will represent some 80% of total vehicles on the roads. Lowering the costs of electric propulsion units by a factor 5 and also increase of their life expectancy, range and battery safety factories or acoustic comfort and numerous research fields still remain to be developed to convince both the consumers and the industrialists. Close partnerships between the academic laboratories and the industrialists in the automobile sectors, though clusters like Moveo – with 173 projects supported, or the Vedecom Institute were specially cited in Professor Friedrich lecture. The LEC unit, Compiègne, profits fully from this complementarity between industrial objectives and academic research. The LEC has its own programme of academic research but also works in partnerships with the major French automobile groups such as Renault or Valeo; the LEC recently contributed to the battery management system for the new generation electric car "Zoé", produced by Renault. For the past year and a half, the research scientists in this academic structure also collaborate with the elaboration of a "low cost" hybrid in the framework called Essencyele, a national research programme (79 Meuros) launched with financial support from the government incentive programme "Investments for the Future". The contribution of the Compiègne scientists consists of designing a low cost, optimized electric propulsion unit. Let's 'Rendez-vous' in 2017 to witness the rollout of the first demonstrator vehicles... ■

d'infos plus ▶ LEC Lab : **http://webtv.utc.fr** > Nos séries > Les laboratoires de recherche

PUBLICATION

Reference manual for *power electronics*

Nicolas Patin is a UTC lecturer and research scientist with the UTC-Compiegne Electromechanical Engineering Lab. (LEC); he published recently, with the French editor ISTE, a reference book entitled « Electronique de puissance pour l'industrie et les transport" [Power electronics for industry and transport uses]. The four volumes will enable students to document studies in the complex field of power electronics with its numerous industrial applications such as power feeds for mobile electric motors (locomotives, cars …), in medical electronics or in micro-computing applications.

"My book can be used to take course material to greater depths. It presents numerous case studies that come from real situations and a full lab set up", he summarizes. After a general theoretical introduction (Vol.1), the other volumes focus on more specific aspects. Power feeds to a variable speed electric motor and cut-power (chopper) feeds – as used in processors – are subjects that are dealt with in readily accessible chapters, thanks to the general overview presented for each chapter. Industrial speed variators (for machine-tool holders or for industrial robot axis power requirements, for example, are studied in detail with a special section given over to no-break power supply control and to stress induced in condensers attached to convertor units. Student engineers in both Mechanical engineering and the specialty Mechatronics, Actuators, Robots and Systems (MARS) and Biological sciences and engineering and the specialty Biomedical engineering will be able to profit from the book, inasmuch as both basic device theory and concrete power convertor designs are covered. ■

L'AGENDA

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2nd Edition of the Imaginarium Festival
May 23-25 mai 2015
For the second year running, UTC students will be organizing the Imaginarium Festival - a Musical Pop Rock event, with more than 20 European artists taking opart in a week-end at Le Tigre (the Tiger), Margny-les-Compiègne.
www.imaginariumfestival.com

Special Day on Face Graft Surgery and Digitizing
Tuesday May 26, 2015
The UTC-Costech Laborartory, in the frame of FIGURES and the project "Technology and Human Traces' is organizing a Special Day devoted to "Face Graft Surgery and Digitizing : how are we to think about singularity?" At UTC, Paris, France.

Study Days on TéléSanté (Telehealth)
May 27-28, 2015
UTC will be hosting the 5thedition of the JETSAN 2015 Conference, on the theme "Connected Biomedical tools for e-health". Various topics will be addressed, e.g., Connected Bio-Med tools, Handicaps and Tele-Health., the e-health eco-system, tele-health and care protocols and systems.

13th European Mechatronics Meeting
June 2-3, 2015
The European Mechatronics Meeting, EMM2015, will be held at the CETIM, Senlis, premises, on this year's theme: Mobile machines for rail, agriculture and public works, handling and lifting equipment.

Conference of Young Scientists in Cognition Sciences (CJCSC)
June 3-5, 2015
The UTC-Costech laboratory is organizing the 9th edition of the CJCSC. One of the aims of the conference is to emphasize applications of cognition sciences in a morning session with the university's industrial partners. The conference will be convened at the UTC Innovation Centre.
http://cjcsc.sciencesconf.org

Summer School "Culinary Science for Tastier, Healthier Food"
July 20-31, 2015
UTC will be organizing a Summer School on "Culinary Science for Tastier, Healthier Food". The School will allow participants to become familiar with basic food notions and preparations such as texture/taste additives. Two days will be devoted to French cooking heritage.
registration : gaelle.dacqmine@utc.fr

PUBLIC DEBATE

A unique approach to an *offshore windfarm project*

Since January 2015, Laurence Monnoyer-Smith has chaired the Special Commission in relation to an offshore windfarm project situated some 15 km out in the English Channel between Dieppe and Tréport. This wind-farm with 62 turbines, capacity 8 MW, is planned for commissioning in 2021. However, before that date, the will be a statutory 100-day public debate, for the purpose of collecting opinions, questions, expectations and fears expressed, from a maximum number of citizens concerned. To implement this requirement, Laurence Monnoyer-Smith (who is also Vice-President of the National Standing Committee for Public Debate (acronym CNDP), implemented a strong set of measures which, for the very first time, truly modernized this democratic exercise.

The challenge is quite considerable: the conclusions of this public debate could introduce substantial modifications, or even bring an end to this offshore windfarm project, attributed by tender to a consortium including GDF Suez, EDP Renewables, Neoen Marine and Areva. "The fact of the matter is that wind-farming in France (as an alternative energy source) – and whether it be the offshore version makes no difference – is, rightfully or wrongly, a subject for heated debate. For any project in excess of 300 Meuros (this project will cost some 2 billion euros in investments alone), the CNDP issues statements as to the necessity to organize a public debate", explains Laurence Monnoyer-Smith. Several criteria were taken into account to substantiate this CNDP decision, such as the environmental impact, national interests, socio-economic factors, the degree of potential conflict surrounding the subject, etc. The CNDP has decided it is necessary to hold the debate for this "Treport project" and appointed Laurence Monnoyer-Smith to chair the ad hoc commission and therefore organize the debate. It will be a "first for her" and will provide an opportunity to apply the results of her research on rehabilitating and renewing public debate and the implication of citizens using adapted tools to do this. "We are working hard on the organization so as to be ready to launch the debate April 24, with a very tight and dense schedule, running up to July 31. We want to take into account both the nature of the project and its context, throwing light on the numerous implications that affect the local scene and up to the national level" underscores Laurence Monnoyer-Smith. Thus, the tourist trade and landscape challenges will be analysed on a par with the inter-regional creation of industrial sectors and the national French energy policy orientations.

From public meetings to Twitter tweets and the regional FR3 television channel

All the points mentioned above will be approached in differing formats, each chosen in terms of its relevance to the topics at hand. In addition to three large-scale public hearings, which are statutory, two conferences have been planned in order to consider the overall context (France's energy policy at a national level and the associate industrial sectors). "We want to invite informative participants who can throw light on the challenges involved, going far beyond considerations

of simple civil, electric and aerodynamic engineering". The lectures, talks and debates will be transmitted live over Internet and reported on FR3 - Picardie and Haute Normandy Regions with a 52 minute TV debate enabling viewpoints of both local and national perspectives to be heard, to which we can add the media coverage of the public debate as it progressed. Four thematic workshops have been organized (the economics, sea uses, environmental impact and territorial identity. They will come as forums, so that the points and exchanges can be taken further among local actors and a travelling artistic exhibition will be proposed, eliciting reactions by all those who may feel concerned about this project. "Aesthetics, which will touch on people's sensitivity, will prove interesting when it comes to getting the public at large involved", feels Laurence Monnoyer-Smith. Some twenty 'mobile' debated will associate this project with other Channel coast events (the Solitaire du Figaro boar-race, the Salon du Livre, local kite-surf meetings and competitions, etc. and meetings with the public – via social centres, solidarity charities, etc.).

A 100-day marathon

The advent of digital media is an excellent ally: over and above the Facebook® page and the Twitter® account, a forum has been organized upstream of the Treport Project site (cf. link below) to allow internauts to raise questions and air their views and expectations. "Throughout the debate, we shall instil a high level of interactivity. It is the first time a Commission has implemented such a panoply of tools", notes Laurence Monnoyer-Smith with satisfaction. "We have brought together the conditions needed to ensure proper discussion of the theme. Now we are ready to launch the 100 day marathon!" Following this stage, the Commission will draft its report and conclusions and will be forwarded as the results of the public debate. It can be noted that on average 2/3 of all projects are either modified or simply abandoned and there is the guarantee that the public points of view have been heard and analysed. ■

d'infos plus **http://eolienmer-pdlt.debatpublic.fr/**

SUMMER SCHOOL

Science in the kitchen

July 20-31, UTC will be organizing its very first international summer school, on culinary sciences and diet applications. The school, held in English, will enable some 20 foreign students to learn how to prepare healthy food based on French gastronomy and the scientific principles used in the agro-food industrial sectors.

An opening to international activities

Not only is France renowned for its refined gastronomy, but the country also possesses one of the most powerful agro-food sectors in the world. In terms of exports, agro-foods 'weigh' more than automobiles! UTC has been training engineers for the agro food sectors for many years now and decided to focus its first international summer school on this topic and promising domain of activities. "UTC enjoys numerous exchanges with other engineering schools and university institutions. The difficulty lies in the fact that we send more students to them than they do to us. Consequently, we decided to organize several events this summer to welcome our partners' students. The summer school on culinary arts may be introduced by an intensive week on French language early July or August", explains Olivier Schoefs, UTC Director of International Relations. In coming summers, we should be seeing other summer schools devoted to other UTC specialties such as cosmetics or virtual reality (VR).

Theory and practice on the menu

In the two-week programme, students from Asia, North Europe, the USA and Latin America will learn to explore famous French dishes from a scientific point of view. "The fame of French 'cuisine' often to be found in the sauces used, rich in fat and we want to show that we can make this gastronomic healthier whilst retaining the full tastes and the aesthetics of the dishes", explains Claire Rossi, Head of the UTC specialty Innovation, Food and Agro-resources, in charge of the summer school organization. Each participant will choose a French specialty to work on in terms of various nutritional criteria and will be invited to prepare and assemble the dishes. Their recipes and presentations will be assessed after the two-week course. To be more precise, the mornings will be given over to some inevitable theoretical considerations. The basic contents of foodstuffs: proteins, glucids and lipids and the products used to prepare and enhance dishes, such as texture or taste additives. In the afternoon sessions, the apprentice cooks will have some hands-on experience in a kitchen unit set up in the UTC premises. On the two Wednesdays and Saturdays, the group will travel to visit the Compiegne area, French cuisine in Paris, the champagne fields in East France and will be able to taste and test the marriage between different wines and cheeses.

Engineers serving the cause of both taste and health

The two weeks that lecturer Claire Rossi will be monitoring and teaching will act as a showcase for agro-resource knowledge and know-how taught in the UTC specialty Innovation, Food and Agro-resources. It is a course offering jobs in R&D in the agro-food industrial sectors, but also openings as quality and food safety engineers or agro-food production engineers. "A bechamel sauce we prepare in our kitchens is not the same as that produced by industrial processes. There are conservation constraints, food safety and uniform production criteria that must be respected. And this is where an agro-food engineers have a role to play", explains the specialist Claire Rossi. The pedagogical contents of the UTC courses must follow closely the evolution in the industrial sectors and the industrialists themselves must try to meet consumer expectations; they must therefore be renewed continuously. "The current trend is to do without additive that come from synthesis chemistry and replace them by natural products, all of which leads to new challenges to prepare reproducible and time-stable products", she analyses. New colour additives are increasingly popular, produced from beetroot or form chlorophyll and texture additive are now made with rice or tapioca starch. Another important requirement is to balance the nutritional contents faced with customers who are more and more concerned with their health. Mayonnaise with 80% less fat content, chocolate mousse without sugar, quiche pies without gluten … several innovative projects are finalized each year by UTC students. The move to adopt healthier industrialized food is a global trend – a Chinese student proposed 'light' raviolis and a Moroccan proposed hyper-protein chorba soup for sports buffs … a step towards tomorrow's food, a hyper-protein salad dressing enriched with insect-flour has been designed, prepared and presented at UTC. ■

plus d'infos ▶ Filière Innovation aliments agro-ressources (IAA) du génie biologique : **www.utc.fr**

Registration : gaelle.dacqmine@utc.fr

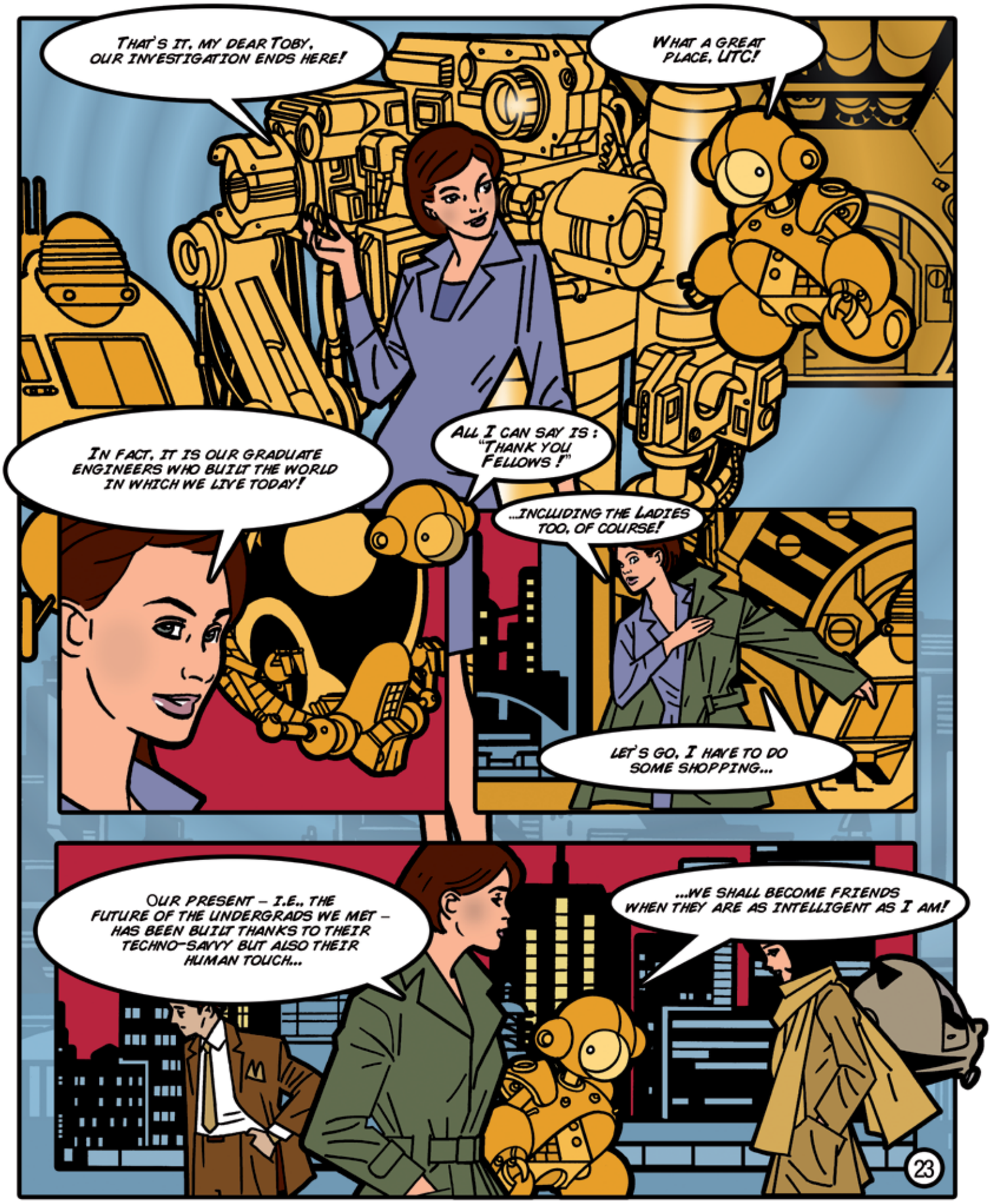
AWARD

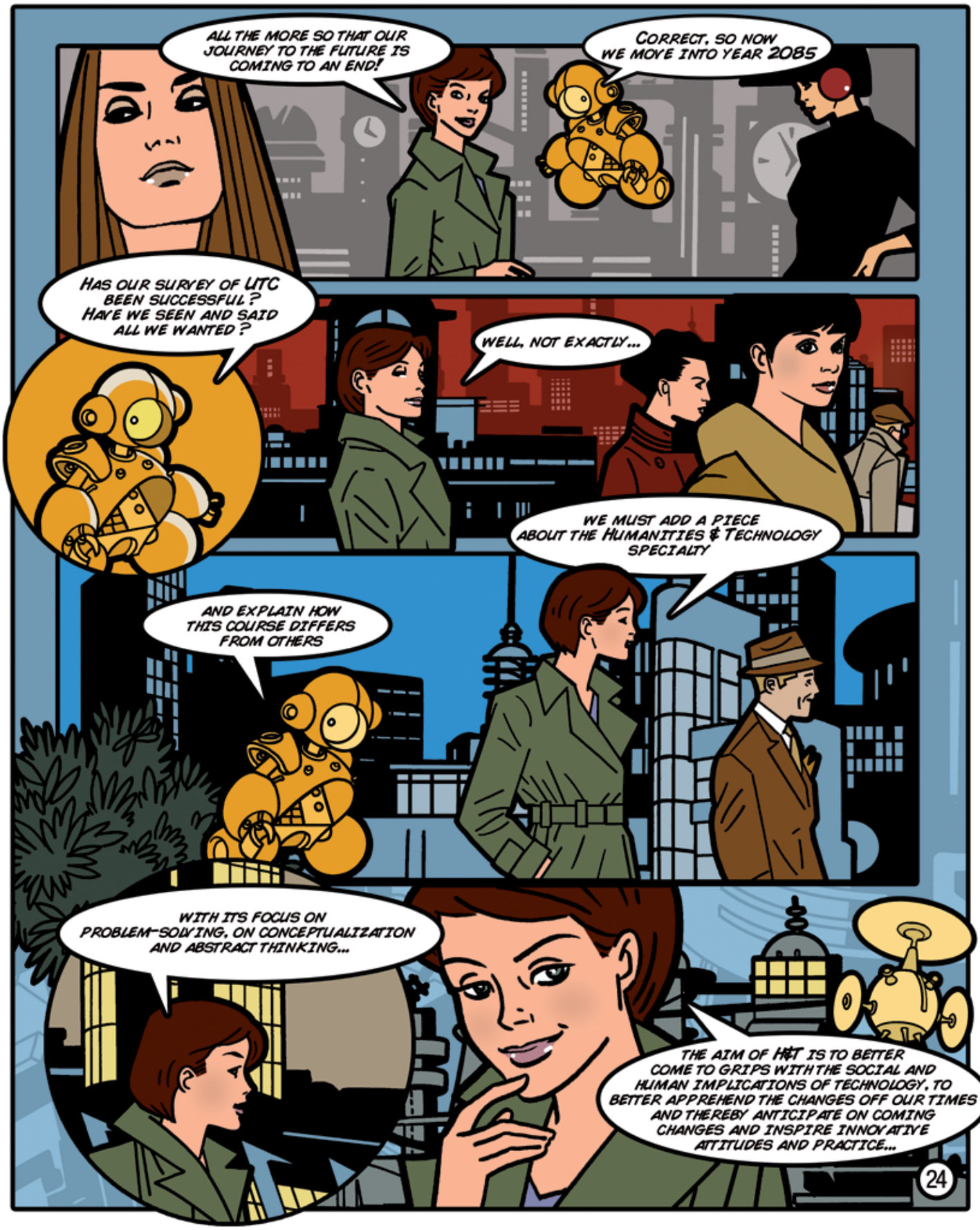
A CNRS Bronze Medal laureate at the UTC-BMBI Lab.

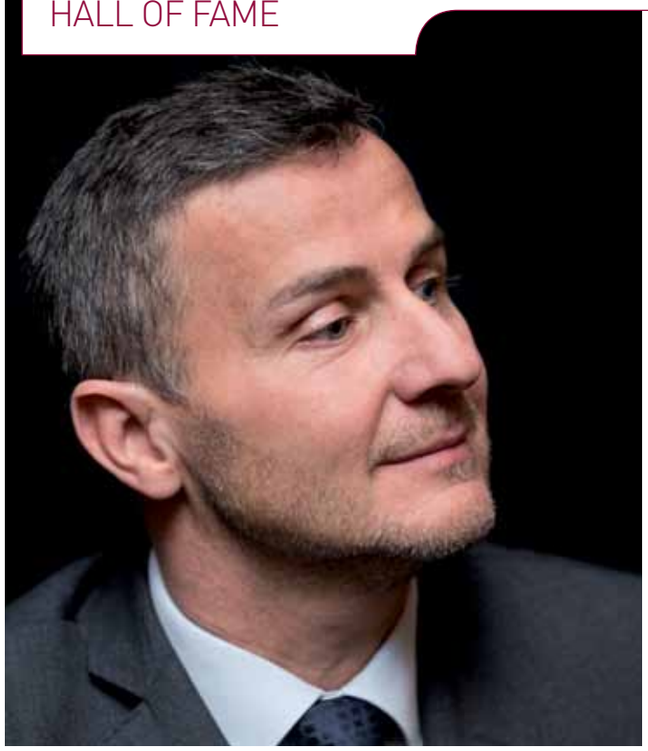
What a surprise for her: Anne-Virginie Salsac, junior research scientist at the CNRS, when she heard she was the year's Bronze Medal laureate of the CNRS. This yearly award goes to significant "first work" research and Anne-Virginie was designated as "a talented specialist in her domain", says the CNRS communique. The award is for her work in "fluid and reactive milieus" at the CNRS-ISIS (engineering sciences and systems).

"In fact I only learned about the award at 9pm and, honestly, I wasn't expecting it at all!" says Anne Viginie with a smile. It is the responsibility of research unit herds to propose candidates; in this instance, it was Prof Marie-Christine Ho Ba Tho who forwarded her name and credentials. And it worked! The Bronze Medal here rewrads her investigations in fluid (bio) mechanics. Her research focused on blood flow at micron scale and on macro-blood-circulation and on optimization of new vascular therapeutic protocols. She is investigating, in particular, the interactions between blood flow and 'deformable" particles, the aims of which are, potentially, to transport and deliver encapsulated drugs to target organs. "It is interdisciplinary work that conjugates basic and applied clinical research and trials. The CNRS Medal also valorizes the dynamics of the research undertaken, namely the scientific projects to hand, publications, conferences and congresses, etc., which all contribute to international visibility" underlines the laureate who was also appointed Invited Professor at the Institute of Bio-engineering, Queen Mary's University, London. She insists on one point, with her characteristic modesty and generosity: "I see this Medial as a reward for all the team round me. What brought me most pleasure was to feel and share the motivation and sheer joy of all those with whom I work. Furthermore, if it can also provide the opportunity to share a moment of joy with them all, the contributors, both 'big and small' for our projects, then I would be happy to organize the party! This Medal is for everyone!" The UTC-BMBI Lab is therefore preparing a local event to celebrate. Stand by for time and place announcements! ■

On its 40th anniversary, UTC rewrites its history, in comic strip style : **In the heart of the Future**




ALL THE MORE SO THAT OUR JOURNEY TO THE FUTURE IS COMING TO AN END!
CORRECT. SO NOW WE MOVE INTO YEAR 2085
HAS OUR SURVEY OF UTC BEEN SUCCESSFUL? HAVE WE SEEN AND SAID ALL WE WANTED?
WELL, NOT EXACTLY...
WE MUST ADD A PIECE ABOUT THE HUMANITIES & TECHNOLOGY SPECIALTY
AND EXPLAIN HOW THIS COURSE DIFFERS FROM OTHERS
WITH ITS FOCUS ON PROBLEM-SOLVING, ON CONCEPTUALIZATION AND ABSTRACT THINKING...
THE AIM OF H&T IS TO BETTER COME TO GRIPS WITH THE SOCIAL AND HUMAN IMPLICATIONS OF TECHNOLOGY, TO BETTER APPREHEND THE CHANGES OFF OUR TIMES AND THEREBY ANTICIPATE ON COMING CHANGES AND INSPIRE INNOVATIVE ATTITUDES AND PRACTICE...
24



The art of innovating technically and humanly

Eric Bonnet-Maes, 50 years old, is Deputy Director General, LexisNexis, France, a legal and economic information media group with 650 personnel. With his UTC engineering degree in Bio-engineering, this hardened captain of industry also followed successfully a Master's degree in Marketing & Management at ESSEC. Here is his impressive track record.

Inspired by what he saw as the potential of bionics and biomechanical engineering, Eric Bonnet-Maes chose UTC as his university in 1986, matriculating in bio-engineering and the biomedical elective specialty which at that time was a very novel course offering. UTC already enjoys a high repute in the Bonnet-Maes family … his Father, engineer and entrepreneur appreciates the work he does regularly with the graduates and faculty of UTC. His Mother also has a degree, in commerce so Eric could also have chosen that track; but he preferred to go through the two year "preparatory" classes aka 'Math. sup., Math. spé.', at the Saint Louis Lycée after completing his science baccalaureate.

A scientific mind with an entrepreneurial touch

"I took on some very special subjects such as recording the biological signals from monkeys turned epileptic but what I found most impressive was the UTC in-house student-company", recalls Eric Bonnet-Maes when he talks about the years he spent in Compiegne. Je joined this USEC (Université Services Etudes Conseils), which "hires out" students to external enterprises on request. By the end of his studies at UTC, Eric Bonnet-Maes had become President of the Junior Company. He committed himself to developing a software package for the R&D Centre of the then French coal-mining consortium - Charbonnages de France. His end of studies internship provided another opportunity to explore different new professional horizons. He chose the medical instrument division at Hewlett-Packard, which sells cardio-echographic units, ECGs, holster and other monitoring equipment for professional health agents. He held a sales position with HP. It was his client relationship at HP that Eric Bonnet Maes found decisive: "I understood that technology alone was not enough to satisfy me". The following year he registered at ESSEC to do a Master's degree in Marketing & Management and became Vice-President of the French National Junior Enterprises Confederation.

From computers to a service offer

For his first post-graduation position, Eric Bonnet-Maes joined HP again. This period lasting over a decade allowed him to try his hand in various positions, starting as a sales manager when he joined. He rapidly rose the management ladder to become Sales and Marketing General Manager (Health Division), Director e-services, Director Home Sales via Internet, Hewlett Packard in 2000. In his quest for new challenges, he offered his talents to SVP, a management consultancy agency. "Integrating an SME allowed me both to decide an implement various projects". Two years later he was appointed General Manager d'Europarts, a bulk merchant in computer and ancillary spare parts. This function allowed him to discover international management functions. In 2007, he moved to LexisNexis : "Joining this SME, I missed out on the innovation side, but understandingly an SME cannot take as many risks as a major company can". LexisNexis, proposing a unique, worldwide legal data base, reinvested 7% of its annual revenue in R&D. "With this company, I discovered a rare balance between technologies and contents with a management staff who leave the personnel lots of degrees of freedom for creativity", says the current head of the French operations of a group worth 7 billion euros, present in over 100 countries. The fraction of the annual revenue is digital activities has risen from 30% in 2007 to 50% today. Technological evolutions have been multiplied since the data base was first put "on line" in 2004 and up to the development of a search engine specialized in finding legal information and data over the entire Internet. "The technical data acquired during my studies did not serve me directly but my engineering background did provide for reactivity and gave me a logical mind which proved very useful in negotiations and in my management functions", he concludes. Could his case be a good example for student engineers at UTC? A double competence engineer- marketing & management is a highly sought profile by innovating companies whatever their sector of activity. ■

BIO EXPRESS

1989 : Graduated from UTC, Biological Engineering with Biomedical selective specialty

1990 : Specialized Master's degree (Marketing & Management), ESSEC

1990-1991 : National Service – Sub-Lieutenant, French Air Force. Aide-de-camp to the Major General, Base Commander

1991-2002 : Sales and Marketing General Manager (Health Division), Director e-services, Director Home Sales via Internet, Hewlett Packard

2002-2004 : Director Trade and Operational Marketing, SVP

2005-2007 : Group General Manager, Europart

2007-2014 : Director Trade and Operational Marketing, LexisNexis

As of Dec. 2014 : Deputy Director General, LexisNexis France

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