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Donnons un sens à l'innovation

Interactions

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You have the floor
le process d'innovation
Jérôme Siméon, Executive Director General for Application Services at Capgemini
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❛❛ FROM THE PRESIDENT'S DESK

What I shall be saying next saturday at the UTC 'open day'

Beyond recalling the strong historic features of UTC, a combination of a multidisciplinary French University and an engineering school open to the world and economic spheres, allying an ambitious level of responsibility, territorial anchorage and international competitivity, our training provides engineers and scientists capable forward thinking in technology while controlling its environmental, economic and societal impact. These challenges lead to technological research based on understanding-doing things … and many other facets!!! Above all other considerations, I shall also note that UTC is one of the rare French universities that anticipates industrial, digital cultural and societal changes. Consequently, UTC will be a major player in the 'battle of ideas' faced with a world suffering for various crises and intends to integrate the changes into its training and research plans. We recognize that these new challenges are immense, whether we refer to globalization, to the digital revolution or to the implications of the duality Mankind-Technology that we find in all new technological developments, or whether we assess our capacity to address transverse and pluridisciplinary problems (transportation, energy, sustainable cities, health, housing …), offering lasting solutions to real world problems (notably in the aftermath of the oil crises, with an ongoing 3rd industrial revolution and a foreseeable factory for tomorrow, for example …).

Through its 5 key values, shared by staff and students alike (creativity, humanism, inter-cultural span, co-operation and daring to think and act differently), UTC is especially well prepared to face up to the new challenges. Today the answers are integral parts of the UTC. 1°our core courses on Humanities and Technology the aim of which is to train students to

Prize rewards student entrepreneurs

February 5, Corentin Huard and Alice Froissac, the latter holding a UTC diploma in industrial design, were awarded the Innovation Prize (the 'Petit Poucet' (Tom Thumb) startup nursery), with nine other laureates. They developed together an infra-red camera that helps firemen to progress in thick smoke and to transmit the data (by wifi). Thanks to the Prize, the two students will receive two months counselling from an industrial enterprise for the purpose of developing their project. ■

Anne-Virginie Salsac laureate of the CNRS Bronze Medal for 2015

Junior research scientist at the CNRS, posted to the UTC-BMBI (Biomechanical and Bio Engineering), Anne-Virginie Salsac was declared laureate of the CNRS Bronze Medal 2015. The annual award goes to a research scientist for a remarkable 'first piece of work', independently of what the scientific specialty is. Some 40 laureates are chosen each year. It is seen as an encouragement to pursue research under way and deemed promising. ■

webtv.utc.fr/watch_video.
php?v=OW4S5YHRYH5M

The Big-Data, Open Data and Social Sciences Seminar

January 19-22, 2015, UTC organized a seminar on the thematic "Big data, open data and Social Sciences". Given the rapid growth of the number of data 'sensors' and regulatory archiving in public administrations, the phenomenon known as Big Data is increasingly seen as a key feature in scientific research and also in the area of new technologies. The objective of the seminar was to explore the implications of Big Data processing-storage, with a special focus on three axes: methodology, the economy and democracy-citizenship. ■

https://webtv.utc.fr/videos.
php?cat=28&sort=most_
recent&time=all_time&seo_cat_
name=

'Agora Quality'

January 23, 2015, UTC organized the event called Agora Quality, the aim of which is to encourage and stimulate exchanges on a range of thematics that relate to quality assessment, between the academic and the entrepreneurial worlds. Consequently, representatives of the business world, students, graduates and academic staff were able to exchange at Qualipolis, the quality-intensive village during the afternoon sessions. ■

https://webtv.utc.fr/watch_video.
php?v=UX9AD95O2OA8

Entrepreneurship and innovation

A Start-up Weekend, a first in the Picardie Region and for UTC, was organized November 14-16, 2014. The concept began in the USA in 2007 and now we can now note some 1 500 similar events taking place round the world. "Their purpose is to make more people aware of the possibilities in entrepreneurship" says Cédric Carvalho, who headed the steering committee and organization.

Cédric Carvalho picked up this idea at a Start-up Weekend in which he participated in the city of Caen, in 2014. The remarkable enthusiasm and ambience at Caen convinced him that a similar event should be organized at UTC, with its institutional aim to encourage entrepreneurship. He approached Joseph Orlinski, who listened, approved and helped Cédric launch the project. "Joseph was very quick off the mark to trust in us and opened up his network. The event was assigned a mission: to make people aware, over a 54h span, of the possibilities of entrepreneurship, through practical events and mentoring exercises. Thanks to the support of the University and President Storck, we organized the Start-up Weekend at the new UTC Innovation Centre, a perfect venue for this with the availability offered on site by the FabLab with its prototyping equipment", explains Cédric Carvalho.

7 mentors for 54h non-stop work!

With a 100% UTC organization Committee, Cédric brought together seven mentors : Olivier Bourdon, Director for Initiative Oise Est, Cyril de Sousa Cardoso, TEDxTalker and co-founder of Mesacosan & Wydeez, Pierre Baigts, Vinotec-Online, Cédric Debacq, a digital imaging expert, Hugo Sallé de Chou, who created Pumpkin, Loïc Leofold, founder Director of Neowind and Dominique Brière, a local lawyer. So what was their assignment? It was to accompany the fifty or so participants who had all come with their ideas, their projects their questions … As of the Friday evening session, these young persons, half from UTC and half from other French HE institutions (Sciences Po Paris and Lille, Paris Dauphine, ESSEC, Lasalle Beauvais, etc.), pitched their initial ideas and thereby set up their respective teams, by affinity in their aims and projects. "The objective was to blend together, make a mix of the visons, their training, their experience to favour innovation and new ideas. And it worked!" adds Cédric Carvalho. The nine teams started to work together that evening and only a few of them had a full night's sleep!

4 enterprises continue the adventure

There were three lectures during the Weekend: the first on the tools of entrepreneurship, the second on 'failure' and how not to be afraid of failing and the third on the experiences of the mentors present. At the end of a hectic, hard weekend, the teams were invited to submit their projects two patron sponsors of the event: 'Picardie Initiative' and the 'Entreprendre' network, and to Bruno Ramond, Executive Director of the UTC Innovation Centre. "Over the weekend, the projects progresses astonishingly well. The local ambience, the means at the student's disposition, among which the 3D printer unit, enabled the actors to 'beef up' their incredible ideas", adds Cédric Carvahlo. Two finalists were selected and invited to pursue the adventure: Leap

Music, the winner who had imagined a 3D interface for music, with the assembly and performance of a working prototype during the weekend and the Jury's 'soft spot' choice in favour of Renovalve, who also put together a prototype of a device to be used to replace deficient mitral heart valves. Two other teams envisage continuing their entrepreneurial adventure: ShareCab, a mobile application for taxi sharing, accompanied by two mentors present, and Sweetchome, an application to bring house owners and possible tenants together.

Next Start-up Weekend planned for first semester 2015

Some of the participants related their experience, providing a good idea of the ambience at the Weekend. Loïc Leofold, Director of NEOWIND, pointed out that "What was remarkable was the friendly atmosphere, the sharing of ideas and the teams' motivations. I had myself taken part in other Startup Weekends but the one at Compiegne was truly impressive when I saw the amount of work put in by the participants and the professionalism of the finalized projects. I have rarely taken part in an event where all the projects were viable. A great success here, and it should be promoted and supported!" For participant Bastian Lizut, a UTC student "We started the weekend with some incredible projects that prevented us from sleeping and kept us going, even when the event was over. It was a superb opportunity to meet real entrepreneurs who shared with us their 'mad-cap' secrets and their magnificent stories … it was the best investment I have made in my life". Cédric Carvahlo and his team are delighted with the success of this first edition and are now planning a 2nd edition during the first semester 2015, with the aim to take the event even further. "What we want to achieve is to consolidate the accompaniment of future start-up companies after the weekend. There are never enough t initiatives of this kind; we must also get the students to mobilize themselves for the student community at large". Cédric Carvalho, Mehdi Ainouche, Nicolas Borri and Ninon Durivault are looking forward to the forthcoming 2nd Startup Weekend. ■

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a first in Picardie!

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The TED lecture organizers decided to create a TEDX option, offering a possibility to those who want to organise an event along the same lines with the same specifications. "This enables us to benefit from their network and notoriety", explains Jonathan Dekhtiar, a UTC student who organized, January 20, 2015, a first TEDX in Picardie: TEDXUTCompiègne at the UTC Research Centre.

Everybody has heard about the TED events (an acronym for Technology, Entertainment and Design). The concept was launched in 1984 in the USA as a non-profit making organization that co-ordinate high level venues with the aim to freely, massively and globally circulate non-political and non-religious ideas. Some examples: lectures on happiness in management, and other scientific topics … In the new TEDx framework, 3 lectures a day are given round the world and the on-line videos count 18 million viewers/month. So when Jonathan Dekhtiar came back from an Erasmus internship in Hamburg (where he attended one such TEDx lecture), he wanted to set up something similar at UTC. By chance, there was a student group who had already looked at the feasibility of organizing a TEDx lecture for one of their credit-course projects at UTC.

"Let's observe, imagine, and implement Big Data processing"

Based on this preliminary feasibility assessment, Jonathan Dekhtiar set up a committee with a dozen or so students who would be in charge of organizing the event. Together they prepared the file to obtain the TEDx operation license. "There are a few rules to abide by, such as not paying the lecturer, but we have a total liberty to choose our guest-speaker. A TED lecture must not exceed 18 minutes, so as to guarantee the dynamic nature of the event and to keep the audience alert and on their toes", explains Jonathan Dekhiar. The theme chosen by the UTC TED team was "Let's observe, imagine, and implement Big Data processing" fitted their wish to address a wide-ranging subject, and potentially long-standing and in line with the University's identity policy. "Observing, imagining and implementing are three key stapes in innovation: we want to conciliate the UTC spirit with that of the TED concept", underlines Jonathan Dekhtiar. For this edition, the lectures were focused on the wider, more specific nature of data, in the context of applications

that relate to Big Data processing: how are data collected, handled, processed and used? "We wanted to demonstrate that Big Data could not simply be reduced to modern espionage by Facebook, Google or NSA … But they can also be the source of benefits in a large number of domains", underlines the student Dekhtiar.

Seven lecturers and a full house

The choice of the 7 lecturers fitted this credo. Jean-Marc Lazard, Chairman and CEO, Founder of Open Data Soft, developed a platform to enhance and facilitate the opening, the re-use and added value for mass data. "He has been strongly committed to numerous Open Data, Open Innovation and Smart Cities, to benefit both public sector actors and major industrial enterprises", as is said on the Internet site for this event (in French http://www.tedxutcompiegne.com/). Jacques Pateau, founder and manager of Pateau Consultants, who teaches Intercultural Management at UTC: he defends the thesis of "virtual closeness", whereby the social networks bring people closer together, to the extent that occasionally we forget the cultural differences that arise in many concrete situations. Alexandre Durupt, who is also a senior lecturer at UTC, uses data to reverse-design objects, while Cécile Monteil, Director of the m-health project at Ad-Scientiam, uses health related data to facilitate prevention in health using connected objects … Again, in the health domain, Antoine Herlin, co-founder of CardioLogs is developing AI (artificial intelligence) tools to aid in medical diagnosis for cardiology. Jean-Pascal Foucault, founder and scientific advisor at tbmaestro SA, demonstrated the use of data to design sustainable buildings. And last speaker, Samuel Goëta, doing his PhD in Sociology at Telecom ParisTech, Co-founder and Administrator at Open Knowledge France, is studying the impact of Open Data policies in organization and production of data. He took part in the launching of the project called Ecole de Données (Data School), cf. (http://ecoledesdonnees.org) which will allow anyone to access and use open source data

without needing to acquire any special or specific skills beforehand.

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Opening up the TEDx event in Picardie

As Jonathan Dekhtiar sees it, the TEDx operation he launched was instrumental to his future plans: he wants to register for a thesis on the theme explored by Alexandre Durupt related to reverse-designing objects by integration of heterogeneous data. "We wanted to cover as wide a range as possible of activities so that we could have a valid overview of the revolution that Big Data represent", recalls Jonathan Dekhtiar. The audience who flocked to the TEDx event was comprised mainly by UTC students, but also included outside non-academic visitors. "Today the Compiegne City Town hall have expressed their interest. We hope that the next TEDx Compiegne will be opened up further for the inhabitants of Compiegne and its conurbation. But this target will be laid on the table of the next President of our association!" ∎

d'infos**plus** ▶ webtv.utc.fr/watch_video.php?v=R3M5Y7X3DK7W

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The DIMEXP Labcom seminar

Certified by the i-Trans competitivity cluster, the DIMEXP Labcom seminar (acronyms for Joint Lab. and DIgital MockUp for Multi-EXPertises) was coordinated by Alexandre Durupt, research scientist and lecturer at UTC, was held Feb.10 2015 at the UTC Innovation Centre. The participants came from both the industrial world (Bouygues Bâtiment, Renault,...), from Research and Development and from academic spheres. They presented high added value software packages for digital mock-ups as used in multidisciplinary collaborate projects related to data heterogeneity. ■

Agreement signature ceremony with Ecole Polytechnique, Montréal

March 6, 2015, UTC and the Ecole Polytechnique de Montréal, will extend for a period of 5 years their agreement to cooperate in pedagogical affairs, at the Quebec Delegation General under the presidency of the Quebec Province Minister in charge of International Affairs and Francophonie, Ms Christine Saint-Pierre, in the presence of the Honorable Quebec Premier, Prof. Philippe Couillard. Thanks to this agreement, students from with institutions will be able to gain a double degree UTC-EPM. The agreement will also enhance and facilitate mobility in exchanges between the UTC and the Ecole Polytechnique Montreal laboratories on the thematic of agro-food industries. ■

Presentation of ESTP (Public Works)

André Morel, Dean of Studies and Innovation Florence DARMON, Director General ESTP Paris (the French public works engineering school, Ecole supérieure des Travaux Publics, Prof. Alain STORCK, President and Vice-Chancellor UTC, Gilles Morel, Director of the Urban Systems Engineering Department at UTC, Frédéric HUGLO, Director Delegate UTC will meet February 25, 2015, along with representatives of the local innovation and creativity ecosystem, CEOs, elected officers from the Compiegne agglomeration, from the Picardie Region and from the Oise Departmental Council. The meeting will be devoted to the project to install a branch of ESTP on UTC premises. The project will consist of hosting on a 2000 m² plateau near the UTC-Urban Systems Engineering Dept., a complete 3 year engineering course (for 150 undergraduates) in the specialty Buildings and Public Works. This ESTP branch at UTC is planned to open in September 2016. ■

Las Vegas and crowdfunding

The start-up Novitact visited the Consumer Electronics Show (CES2015) held annually in Las Vegas. January 6-9, 2015, the company presented its connected wristband which allows the bearers to communicate discreetly. There was a lot of interest expressed in this atypical object aimed essentially at the professional market segment.

This return trip to Las Vegas was the prize that came with being the laureates of the UTC Digital Spring 2014. Novitact was created in 2013 was part of the French delegation in the French Tech group, with some 120 companies. Minister Emmanuel Macron (finance, industry and digitization) went over with the group. "We showed our product all week the area set aside for start-ups, it was our first international exposure and it led to lots of expressions of interest and curiosity", noted Thibaud Severini, chairman and co-founder with Vanessa Caignault of Novitact. Their bracelet/wristband allows, for example, two persons to communicate discreetly by simply pressing buttons, the signal transmitted generating vibrations in other wristbands connected by Bluetooth. The technology employed is adapted to situations where visual/oral communication is difficult or even dangerous (transportation, events, public works, defence, health …). Today, the start-up is busy raising funds, calling for participative financing through the platform Anaxago*. Novitact hope to raise 550 000 €. "This will be a very good lever for our innovating company and for the sum, but it is an amount that is not very common for the classic financial circuits", he underlines. The fund-raising campaign got off to a good start, raising 150 000 € in just two weeks. The money will serve to develop our commercial and marketing forces in France and abroad. Since early 2015, the first 'Feeltact' bracelets are being commercialised. ■

After the crowdfunding, *the crowlending*

Is there some easy way to share the economic benefits of a wind-farm? Wind turbine manufacturer Valorem has been weighing up the question for a long time now. And, for the first time in France, through participative finance, it is now possible to answer positively! Valorem has consequently launched such a participation on the Lendosphere* web-site. The offer enables those who wish to value-add to their savings and thereby finance the final stages of a wind-farm located on the Santerre Plain, in the Somme department.

The principle is straightforward: as of October 1st 2014, private individuals can lend directly to enterprises and assume the role of 'bankers'. Via approved Internet platforms, you can lend up to 1 000 € per project, with interest rates far in excess of what you get from the famous « livret A » (Postal Bank savings account). For example, for the Valorem operation, the annual rate has been set at 5% with a bonus of 6% for Picardie Region contributors. Objective – to associate the local population with the development of a wind-farm with 8 turbines, planned to go on line end 2016. Jean-Yves Grandidier, Chairman-CEO founder of Valorem explains: "Valorem wants to build up a future for citizen investments in the area of renewable energies. Participative financing operations are part of the solution to share the economic benefits with the local populations. And if, over and above the environmental benefits, the wind turbines become an attractive savings scheme, then everyone is a winner! We wish to multiply and make this sort of finance source sustainable; moreover, it fits in well with the industrial philosophy of our Group". The operation represents a "first" in the Picardie Region, where wind power has become a front-line economic sector in recent years. With another Region, viz., Champagne-Ardenne, Picardie is the first ranking region in terms of installed power capacity and has attracted a large number of actors specialized in this sector. Valorem has a branch office in the regional capital city of Amiens at the WindLab Centre, where there is an offer of specific training courses in wind-turbine maintenance. Through this offer (in mechanical engineering, in specialist masters' degrees, in apprenticeships, etc.), UTC has created links with some of the actors involved. Today, with the opening of the participative finance option to loans with interest, hitherto the exclusivity of the banks, we have a new way now to associate a local territory with development of renewable energies. For this "first", Valorem has launched a loan with a ceiling set to 250 000€ that will be reimbursed over two years (8 quarterly pay-outs, with capital and interest payback). "Crowdlending, as it is called, represents a new form of savings for the French. The wager that Lendosphere is making is to give us all the means to choose – in a profitable manner, at our scale – the world in which we want to live. Every citizen can direct his savings directly to projects in which not only he places his trust, but can participate in this way to national and local ecological transition", concluded Laure Verhaeghe, co-founder of Lendosphere. ■

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The CyberBulle Festival

Comic Books
a gateway
to enhanced
Imagination

Many bridges connect the worlds of Comic-Books and Science. From Sci-Fi to science popularization, the first area where the links are made is in the content-matter. Today, we see the impact of digitization, both in drawing production, in book edition and in reader practice. These two worlds interact and throw light on the relationships that humans have with technology. This issue of Interactions presents a dossier that is dedicate to these two universes, slightly ahead of the CyberBulle Festival, programmed March 23-29 at UTC.

The 9th art for a
6th sense to science?

Comic Books and sciences? Ever since Descartes, we have learned to distrust mental phantasies. As Newton once said "I do not imagine hypotheses". And yet the epistemologists who have described the progressive constitution of science and of the "training of scientific spirit" well know that without imagination, without intuition, or serendipity, we would not have made the amount of scientific progress we recognize today. There would be less theoretical discoveries, practical or technical inventions.

In the period of the industrial revolution, training in scientific culture was primordial for the Lumières. Alembert and Diderot's Encyclopaedia was no longer just a simple dictionary; it presented figures and illustrations which disseminated new knowledge for a number of contemporary intellectuals. Their work popularized science and described the practical challenges behind some of the most important concepts and discoveries such as the end of geotropism. If we can readily imagine that comic books, along with documentaries, television, video games, literature represent modern science, then illustrations played the same role in the Encyclopaedia, viz., a powerful means to transmit basic knowledge and beyond the transmission to inspire some scientific vocations or to throw light on some of the deeper-reaching mechanisms of the adventure that constitutes the sciences. Comic books can be multi-facet, including both the best and the worst, ranging from a political

caricature that overthrows bigots' certitudes, from rough-shod propaganda to subtle and precise presentation of a multitude of human activities. As I see it, there are 3 levels at which comic books encounter knowledge and science.

The first level is illustration using images and stories inspired by the world around us, composed as it is with an increasing fraction of technical artefacts, including bio-technical devices; this level makes technology easier to understand and helps disseminate scientific culture in the face of preconceived ideas and fears.

Comic books may appear less flexible or rapid than image or movement-based arts (films, documentaries, interactive video games). But they combine the advantages of writing in a short, pithy style and those of images, with a limited outlay of means. Readers can appreciate how the events portrayed are sequenced, how the meaning develops and the overall construction pattern. Comic books carry a symbolic connotation; they classify and

organize the overabundance of the images. Whatever the style or genre, comic books serve as propaedeutic to assimilating codified knowledge. We can cite historic comic books Maus by Art Spiegelman (1986), or Christin & Bilal (Les phalanges de l'ordre noir [the black order phalanges]), or F. Bourgeon (1979) Les passagers du vent [wind passengers] ; again we can cite science-oriented comic books such as the lune est blanche [white moon] by F. & E. Lepage (2014) without forgetting Marion Montaignes's series Tu mourras moins bête, La science c'est pas du cinéma [You will dies less stupid – science is not cinema] (2011) or La ligue des économistes extraordinaires [the league of extraordinary economists] (2014) authored by Simmat & Caut, to make you less stupid in economics. Comic books can serve as a pedagogical help in science education. That is worth our consideration and esteem.

But the analysis does not stop here. The aesthetic and symbolic success not only throws light on

'solid' science achievements, those that marked our past, but also points to the halo that encircles all past and current knowledge. It is human beings who explore the universe, the brain and our biosphere. Humans tend also to resist mankind's discoveries. They rapidly familiarize themselves with new techniques and even invent new utilizations for older ones. Comic books taken in this connotation, increase our knowledge of both homo sapiens and homo faber just as literature does in general. We can think of the work architect Jean-Pierre Houdin and archaeologist Bob Drier have been doing, exploring since 2011 the interior of the Cheops pyramid using Dassault System's robot Jedi [Djedi]. Their aim of course is to learn how the pyramid was built and they admit to reading and enjoying

Le mystère de la grande pyramide [The mystery of the great pyramid] by E. P. Jacobs published in 1954 and 1955!! The comic book Partie de chasse [the hunt] by Christin and Bilal was published just 6 years before the communist regimes collapsed. A good many politicians would have been advised to read this book to prepare themselves for that improbable but nevertheless possible events that constituted the fall of the Berlin Wall. Third and final level: the comic book frees our imagination. Today, art is a precious ally off science faced with the degree of existing complexity – which is no longer just a calculable factor. We must invent new forms, think ahead to the future forms, faced with the challenges of problems, each comprising hundreds of variables. The engineers and

scientists working on future space travel to colonise distant worlds nourish their minds on science fiction and here the comic books are very rich sources: such as Akira by Katsuhiro Otomo, (1984), Naufragés du temps [time castaways] by Paul Gillon (1977) or Mondes d'Aldebaran, Bételgeuse, Antares, Survivants, by Leo. Those who are designing tomorrow's smart cities are already working with Big Data but the Big Judgment they need is there today in the cult series Les cités obscures [Obscure cities] by Schuiten and Peeters and Revoir Paris (both the Comic Book and Exhibition, 2014).
The 9th art definitely has a role to play in pursuing the adventure to higher levels of knowledge.■

UTC FESTIVAL

The CyberBulle Festival,
dive into a digital Comic-Book world

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A great surprise for Nicolas Damay, when he first came to Compiegne in 2006, was to discover that UTC housed one of France's richest Comic-Book Libraries (BDs in French), with over 7 000 items. Today Nicolas is preparing his PhD thesis and, in parallel, is organizing the CyberBulle exhibition at UTC, the first, virtual and real Comic Festival that will provide a serious shake-up of the classic BD Codes. With Benoît Cassel, Chief Editor of Planète BD, THE reference site in France, Nicolas tells Interactions readers about this outstanding event, to be held March 23-29, 2015 at the UTC Innovation Centre, patronized by author-illustrator Denis Bajram, to whom BD fans are indebted for his brilliantly rated series "Universal War".

Nicolas' passion for BDs came from the UTC Library section for Comic-Strips. That was where he discovered the extent of BD production going back to the ever-fashionable Astérix, Gaston, Marsupilami and Tintin series of his youth. "This Comic-Book Library has been in existence since 1986 and is constantly enriched by students who are its curator-managers" recalls Nicolas Damay. "What you must realize is that France (together with Belgium) is one of those countries with the most sizeable Comic print businesses". In France, as elsewhere, the market-place and habits in the BD world are constantly being renewed and here also the digital world has totally changed the way the author-illustrators, the editors and the Comic-Book readers work and enjoy the editions.

Exploring new Comic creation and reading modes

The Festival is devoted to new comic-street practice: digital creations, turbo-media, artist digitization, on-line reading … What, for example, is a digital comic-strip? Can comics talk about science and the future? What will tomorrow's techniques be? From creation to reading, via editing, the CyberBulle Festival brings together speakers on these very topics and practices. "The aim is to discuss and think about digital BDs in all their specific aspects, from digitized creation to new reading modes. Authors today use computers and readers increasing read the Comics on screen, even if the digital world here is open to controversy", underlines Benoît Cassel. Some authors gain in reputation thanks to digital outlets, through their blogs and can become their own editors, by-passing the paper-print format. Moreover, the main Comic editors have joined together in associations to launch BD server platforms, two of the main editors being Iznéo and ComiXology, offering subscriptions (purchase or hire contracts), or BD streaming. Turbo-media comes half-way between BDs and cartoons and proposes a new form of interactive image. "New supports are coming 'on-line' such as the Mediaentity offer with a good example of transmedia BD which enable viewers, inter alia to access interactive content with their mobile phones enabling each reader-viewer to take part in the unfolding story-board", explains Benoît Cassel. The CyberBulle Festival will raise questions about digitized BDs. The reason is that certain authors, who use digital tools to create their work, have stepped back from this new practice and today only swear by paper, pen and ink. And on the readers' side, some also have a special rapport with the printed editions – Benoît Cassel is one of them!

A digital interactive festival

To take the Festival to its logical conclusion, CyberBulle will be both digital and physical. From Monday to Friday, several one hour broadcasts will be viewable on www.cyberbulle.com. The Internauts will be invited to visit an artist's workshop, a school of art, the premises of a local editor, etc., and can place questions on-line. The lectures, workshops and events planned during the weekend will be transmitted live. For internaut visitors, there will be no charge. "We want to be different from traditional festivals to facilitate the meeting of public and the authors, and to avoid the outdate ritual of long lines of persons waiting to have a BD dedicated. To wait for two hours for such a 'short-lived' meeting is not satisfactory for the visitors or the authors. That is why we shall organize a maximum number of situations that enable informal meetings to take place at the UTC Innovation Centre, as well as workshops so that the participants can try their hand, under the guidance of an author, to create a page or two, viz., learning hands-on" adds Nicolas Damay. And we shall not forget the debates and exchanges on the topics of the BDS and the impact of the digital world, where those who cannot physically be present can take part by Twitter®.

Building bridges between science and art

Nicolas offers his opinion as to the connections between science san comic books: "Science cab appear as austere and inaccessible. BDs really could contribute to popularizing science and technology, especially in our image-intense Society. Drawings introduce a lighter touch, some humour too and that way the scientific content can be passed on more easily without betraying the fundamentals involved. BD authors in this area are very important allies of the scientists", he pursues. Seeing a BD as a pedagogical tool, is a concept that pleases Marion Montaigne and Aurélie Bordenave, both of whom are authors-illustrators and 'popularizers', with a shared passion both for the drawing skills and for science (cf. p. 8 and 10)? But Benoît Cassel, whose Planète BD writes papers on practically every edition that comes on the market, regretfully observes that there are not enough scientific subjects. "BDs are still a form of entertainment, a game and a pastime and has not yet become a recognized support for popularizing science. We want to show that there are bridges between science and art and that bringing the two worlds closer can be largely mutually beneficial.

However, it is the sales aspect that dictates the market value and it is stagnating in France after a strong rise in the 1990s and 2000 first decade". He observes the return of super-heroes, a decline in manga and a stabilization for Franco-Belgium tradition in BDs. The number of authors is still growing, as is the quality of their work. "The current crisis in the BD sector and the increasing demands from the readers is putting pressure on everyone to offer higher and higher quality production", analyses this son of a book-seller's family, who has practically read everything he could get his hands on since he was a toddler.

Dive into the Comic-Book!

There is some equipment at the UTC Innovation Centre that allows for total immersion, via the VR (virtual reality) room which will allow visitors to 'move around' Jean-Michel Ponzio's drawings (cf. p. 11). "The digital world allows us to enlarge the scale of the 'potential' new views, to the extent that here, for example, we can dive into the art-work! This first CyberBulle festival will help establish a new festival standard, which will be partly dematerialized associating foreign artists' work more easily. It is also a less expensive model to set up, is more accessible, more open to the public in general and where the profitability does not depend on the length of the queues to get the BDs signed and dedicated by the authors. The ultimate objective is to facilitate meeting public-authors-readers", underline Nicolas Damay. Benoît Cassel approves, adding "this first edition for the Festival will not be, we hope, the last one". Will these new creation/reading modes for Comic Books be commercially viable or will they remain experimental? This is the dual question – the answers will be revealed in the coming episodes. Stay tuned Folks! ■

d'infos **Plus** ▸ **www.cyberbulle.com**

POPULARISATION

Marion Montaigne,
popular, uninhibited artist

The character Professor Moustache covers a wide range of topics, ranging from aircraft turbulence, to discoveries on the deep-ocean beds, or to the consequences of a head graft, to crowd movements… all of which with their scientific content can be popularized with an occasionally trashy sense humour for the total delight of thousands of readers. Interactions interviewed Marion Montaigne, an author who will be present at the CyberBulles Festival.

Marion Montaigne immediately replied positively to the invitation to come to the Compiegne CyberBulle festival, with its inter-active features and all the more so because she likes the city… so how could she say 'no'? "Working with digital media allows you to free yourself from the occasionally corseted format of classic festivals", says an enthusiastic author-illustrator, who from her childhood days has always taken passionately the marriage between writing ad drawing. "In a sense, that is how I express myself. I am also enthralled by science; there is no stopping me from learning more and being impressed by scientific discoveries, that transcend the bounds of fiction", she explains. Through her drawings and texts, expressive and portraying movement brilliantly, she delivers real scientific lessons on a humoristic tone: do you know the different psychic states of an astronaut? They are explained in detail and with a touch of irony on her blog home-page*. Three volume of her BDs have been edited since she started working via Internet. "You'll die less stupid" with the subtitle "But you will die, for sure".

Stage setting science

"Science provides intelligent answers to concrete questions. I have a soft spot for biology, which explains in simple terms how the human body works, no frills, no small talk, nothing but the truth", adds Marion Montaigne defensively. Her drawing talents serve the same vision, rough-shod but always exact and funny. The reason is that we have an author here who invests in studies, each page is researched and the bibliography used appended to Professor Moustache's adventures. "A comic book gives you an image, a stage setting for science. When a research scientists explains his work to me, I visualize it to take it in and get to grips with the technical contents. It my way of making science

less intimidating, more accessible, for example with white blood cells use familiar terminology and look like policemen and not graphics in a PowerPoint® display. This way my readers can access and integrate the message", stresses Marion Montaigne. The question is: how do scientists see this popularization which is set in a format very distant from the usual scientific paper conventions? "They are in fact forgiving and indeed see the advantages in the interest that their work can raise and that my role, my personal fascination, come with good intentions. They understand that under certain circumstances, it is better to approximate rather than get lost in long explanations. If my drawings give the readers the urge to learn more, then it makes my day!"

CELLULES APRÈS CONGÉLATION
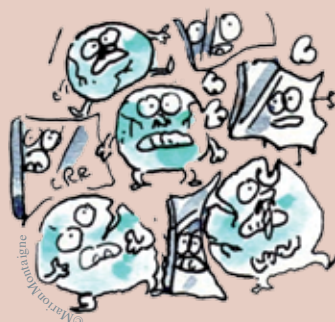
"It has to be visual"

Many teachers ask for permission to use Marion's BDs in their lessons. Marion – who for moment kindly refuses the request for an autopsy – spends time with research scientists, gradually building up her knowledge of entomology, astrophysics, medicine, biomechanical engineering … "The word is out that I should do more physics, more mathematics. But it has to be visual. I myself have to see the potential for a joke and how I can stretch the subject to please my own instinct. And sometimes, I see absolutely nothing!" For the past 12 years, her drawings have gained in notoriety. She started with a blog, the success of which depends on the public buzz and Internet. Marion today is now trying her hand at cartoon films; the first one is under wraps on the drawing board and will be produced end 2015. During the CyberBulles Festival Marion intends to meet UTC research scientists! ■

d'infos plus ▶ http://tumourrasmoinsbete.blogspot.fr/

ARISTOTE, C'EST UN PHILOSOPHE BARBU QUI EST NÉ EN -365 EN MACÉDOINE. ÇA NE VEUT PAS DIRE QU'IL EST NÉ PAR -365°C DANS UNE SALADE…

GLA GLA GLA

Sci-fi, Mankind's ultimate safety net

Denis Bajram, godfather to the Cyberbulle Festival, is both author and illustrator of the "Universal War" cult series that sold over 1 M copies. This high-dive into a post 2058 world resulted from a feeling of uneasiness experienced by the author when he observed the deviations of civilization. Sci-Fi is his weapon to wake up those who read his work.

"What I want are real encounters with my readers Eight years ago, I stopped my comic-book dedication sessions, pressurized to the extreme as they are by professional collectors. So, when Nicolas Damay and Benoît Cassel told me about the CyberBulle project, I immediately saw the potential for a BD Festival thanks to a combination of the real and virtual worlds", says Denis Barjam, by way of an introduction. He speaks quickly, enthusiastically and contributed to the specifications for the CyberBulle Festival. "Our real ambition ion the long run is to prepare a new festival model that will not be restricted to the usual exhibition/ lectures /dedication sessions, but will do all it can to ensure that the creators really meet each other at the event and via Internet. This reinvention of the Festival is really necessary. We must identify new ways to discuss comic books. Despite an enormous amount of creativity, comic books sometimes get stuck in a rut. This tends to accentuate the "invisibility" and fragility of the small authors", says Denis Barjam who is also the coordinator of the French Comic Book 'Etats Généraux' and who is engaged in a fight against a pay reform that negatively affects the superannuation retirement income of the authors "it is absolutely necessary that a decent retirement be given, but not at the expense of the lowest salary brackets".

A 100% digital drawing

To act as godfather to the CyberBulle festival seemed an obvious option for Denis Barjam, all the more so when he noted the extent to which science and digital technologies irrigate his work. Denis has always been keen on technology and engineering sciences and he has an excellent background in astrophysics; indeed he was among the pioneers who moved into digital creation – even if he himself was of the generation that began without computers. "My personal tastes and the way I do things are intimately related. For Universal War One, viz., the first of three series, each of which has 6 volumes in the Universal War, I used digital tools every bit as much as my knowledge in astrophysics. I began doing my book covers digitally, then I start colouring my work and finally I do all my artwork by computer, as of 2001. I no longer have a drawing table at home", says Denis with a smile. So why this sharp change in method? "Paper and pen have been replaced, but not the artist's hand. There is a degree of freedom offered by digital techniques inasmuch as I can experiment far more than just with my sketch-pad, where the possibilities when you make a mistake and want to erase are limited. My 'touch' are far freer and I take more risks with my drawings", he analyses. In the context of the coming

Festival, he wants to demonstrate this side to digital creative work as "a fully integrated artistic practice". His drawings and style have evolved quite a lot since he began, can we attribute this to the digital aids and tools? "I have no idea. Maybe my drawing style in fact needed the digital aid to become mature …" Whatever the answer to this question, this author with hundreds of thousands of copies to his credit, who has become a cult figure for readers of sci-fi and the general public, is forever unsatisfied with his production. "I have always compared myself with those who are bigger than me, ever since the playground at primary school", recall a Denis Barjam who, back then, already bathed in the fantasies of the Goldorak generation.

## A magnifying glass on the consequences of the way we live

Science fiction is a passion that goes back to his childhood days, a pleasure and an impulse. So, much so that Denis started writing/drawing – as of 1997 – the 18 volumes of Universal War, spread over three 'seasons', the first of which was completed in 2006. The second is under way and the third will follow in due course. The storyboard starts in 2058 which the advent of the Wall which prevents any communications between the earth and colonies on Saturn and Mars – anti-gravity had been discovered in the 21st Century. The script includes use of space-time travel, space vessels and, above all else, the first universal war between the Federation of the United Earths and the Industrial Colonization Companies … "The subject matter for the series came in fact from a deep feeling of pessimism as to the way out civilization was headed. At the time, climate change, economic crises were not yet in the headlines but I had this strange feeling that mankind was driving straight into the wall and was not aware of this. My story line relates this self-destruction. Following the euphoric post WWII years, with the successful conquest of near space, mankind narrowed its vision fighting to exploit the last remaining resources on Earth, rather than unite forces and progress, and aim to overcome difficulties. Universal War is a cry of despair: today Mankind is in a process of self-destruction where, despite the widely shared knowledge we have about ongoing climate changes, we have done nothing to change our life-styles", explains Denis Barjam, who alerts his fellow humans via his sci-fi creations. It helps use the future to act as a magnifying glass on what we can observe today and its consciences. "Sci-fi work is social, political and popular and does not deliver lessons. What I'm trying to do is to distil

anxiety and also a call to action: we can succeed if the will is there".

"I believe in the poetry of science"

Comic books combined with sci-fi allow you to reach out beyond the fans to the public at large. And Denis Barjam is totally convinced of this: the film Planet of the Apes proved more efficient when it came to avoiding a nuclear catastrophe, than all the intellectual spiel on the subject. "Artists are like shamans, who show the village for what it really is and what it will become. It is the villagers who must perceive the message to evolve", he adds, by way of comparison. "Today our answers depend on each person: we all possess personally the solutions. It is urgent —and politicians will follow suit – as always". Universal War is like a giant, multi-tiered cake, using all the tricks of a major Hollywood movie to deliver a vision, and some deep-rooted thoughts about the future of Mankind. "Just as in the film Amadeus, about Mozart: spectators enjoy the life of the musician but also the great debate on musicology. In France, with the number of exhibitions, which adopt standards for a certain elite set of readers, we have abandoned power and emotion to the Americans. I believe in poetry, vibrations, symbols, in a Bible without a God, in transcendence, … all of which we find in science; we learned in Schrödinger's quantum physics that a cat can simultaneously be alive and dead, and that only through observation can we ascertain its state. That is pure poetry at its best! In like manner, the way the human body functions is absolutely fascinating, incredibly beautiful. My fight aims at making our civilization understand and realize that they must preserve this beauty. I am a committed humanist." ∎

©DenisBajram

POPULARISATION
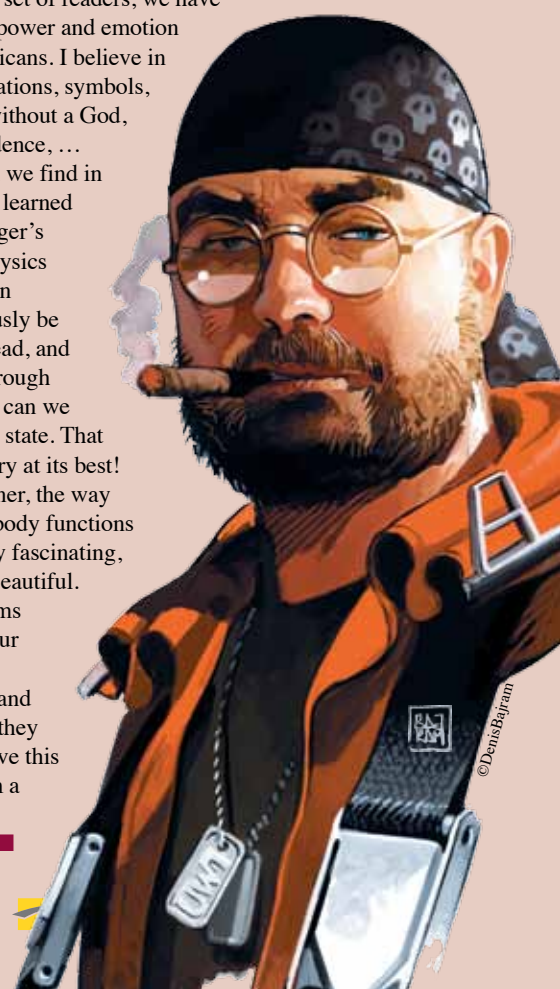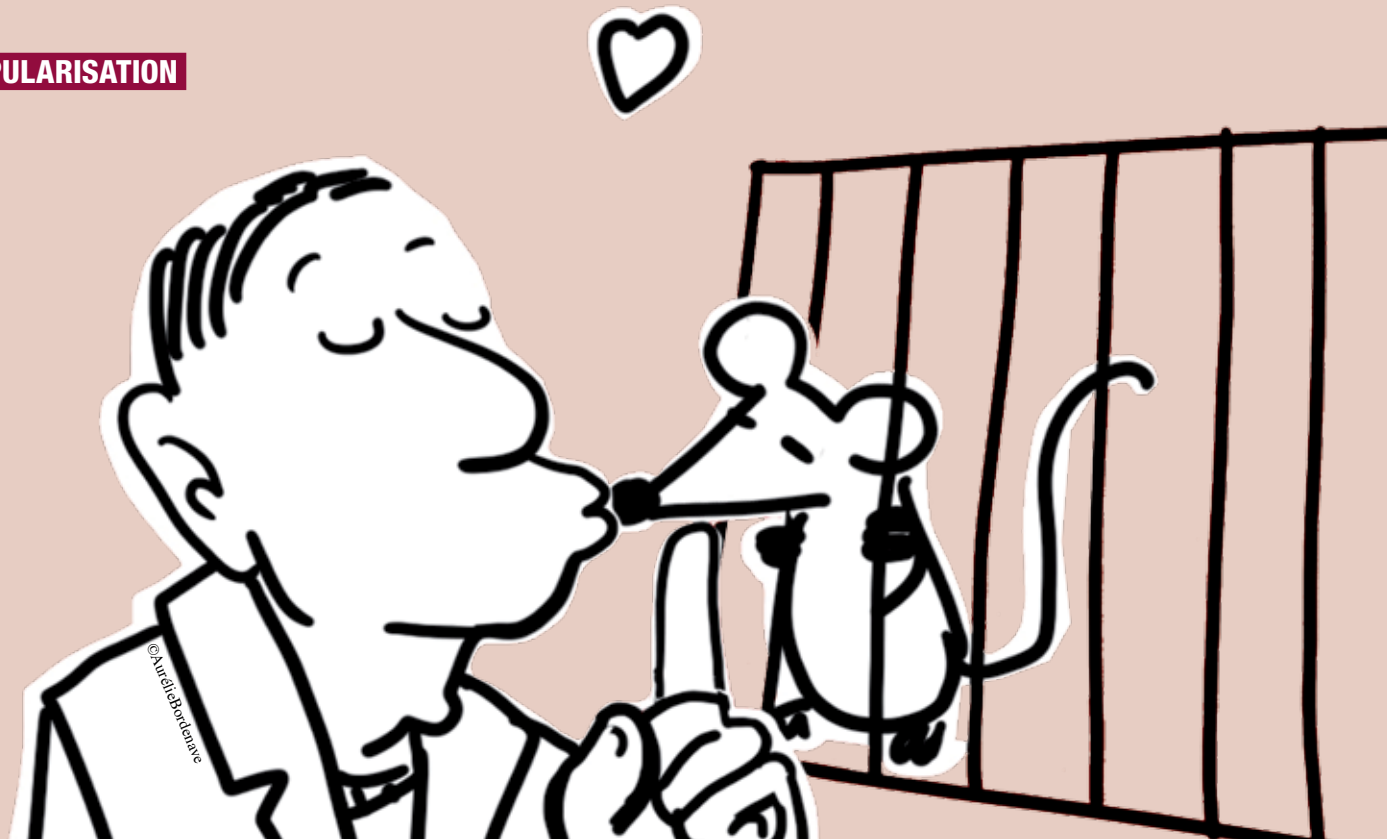
Taking science out of the lab.

Why science? "Science is inexhaustible, very varied and it enables me to continue to learn", replies tic-tac-toe, Aurélie Bordenave, an author-artist in science, who has illustrated "Interaction" dossiers on several occasions. After gaining her Baccalaureate S (science), she indeed hesitated between integrating an art school and becoming an engineer. She opted for art and it is in this manner she serves science.

Aurélie Bordenave graduated in the specialty Design and Scientific Illustration from the Ecole Estienne art college, Paris. A scoop: "Before I integrated the Ecole Estienne art college, I did not even know it was possible to work with scientists to illustrate ad-mass texts and scientific papers. When I was a young girl, I dreamt of working for 'Science et Vie Junior' - I had a subscription. That really was a magazine that made science accessible", Aurélie recalls. Today Aurélie Bordenave has seen her dream come true and she is now a regular contributor to Science et Vie Junior, and likewise for Ciel & Espace [Skies and Space], which is a reference magazine in research establishments such as INRIA and the CNRS. Aurélie Bordenave has produced several 'popular science' films about research scientists' work. Last year, she illustrated the cartoon sequences in the programme La Tête au Carré [France Inter] to demonstrate how varied the subjects can be and also to "pass on" scientific information more readily.

With her head among the stars

"Scientists themselves wish to move on from institutional communication formats and are seeking more original and innovative ways to communicate and discuss their science results. Increasing numbers of videos and cartoons are coming onto the web. It has become an inescapable tool, even if some people are a bit frustrated not seeing as much detail as they would have liked. Now we have a new generation of scientists creating their blogs to share their lab. experiences and work, and this is highly stimulating for us". Aurélie Bordenave is collaborating more and more with 'animators' to help with her illustrations. She also illustrated some French first year college (age 11-12) school books in SVT (Life and Earth Sciences), with editor Magnard. "I approached all the editors as soon as I had finished my studies!" she adds with a smile. "But their editorial lead-times are very short and their needs (and specs) are very demanding. What I love most is my collaboration with Ciel & Espace alongside personal studies I am undertaking with the help of some astrophysicists". In short, this new work relates to an investigation "in the wings" of a research laboratory specialized in astrophysics, in the framework of a Sino-French mission to send, planned for 2021, a satellite designed to help understand gamma radiation bursts. The latter are gigantic energy 'flashes' and constitute one of the major research topics in astrophysics today: the work could provide keys to the Big Bang event and the beginnings of the Universe. The objective as Aurélie Bordenave sees it is to present an interactive web site that blends comic books and sound – by a radio journalist – to popularize the research work. With her head among the stars, Aurélie would like, after the excursions into space, to plunge into environmental sciences.

Real time drawing

In terms of creative work, Aurélie Bordenave immediately started using digital tools. She adopted a pragmatic approach and uses either paper or her drawing pad, depending on the circumstances and the visual effects she wants. "With a digital tool, kit is much easier to retouch, correct, modify … it is less risky and offers more flexibility. When I am answering a customer's order, digital tools allow you to adjust the work more readily to what the client wants", she underscores. Aurélie Bordenave can also draw "live viz., in real-time", a real performance! "This calls for personal concentration and synthesis. It allows me to attend some very exciting lectures where the drawings I produce can be used later as supports for scientific communication and synthetic popularization of science". When she herself becomes a reader, she prefers paper as a concrete object by far and she loves her personal library. But it is her Internet site* and well as public rumour that have allowed her to become a "VIP figure". So, to conclude, what pleases her? Moving scientists out of their laboratories and allowing the public to see inside! ∎

plus d'infos ▶ http://aureliebordenave.fr

Digital decors and real characters :
Jean-Michel Ponzio's personal mix

Decor made using only 3D techniques, characters drawn from natural reality: the Universe of Jean-Michel Ponzio stands at the crossroads of real and virtual worlds. In the context of the forthcoming CyberBulle Festival, visitors will be able to move in one of his decors, thanks to the VTR (virtual reality) immersion room at UTC's Innovation Centre.

Jean-Michel Ponzio came from the world of cinema and special (digital) effects. Then he had the urge to tell his own stories, whilst preserving the use of virtual techniques to create his albums and decors. "Science-fiction allows you", says Jean-Michel introducing his point, "to free yourself of all constraints of resemblance and that satisfied my personal wish to invent all my decors and my story-lines". Using digital techniques, he creates 3D decors and then moves in these virtually top photograph various angles, objects and parts that he will make use of for the story-lines. "These 3D sets give me some valuable information about the universe in which my characters live and evolve. Once I have my photos, I can work on them, redraw the scenes and integrate the characters I have in mind, which process lends an overall coherency to my work", adds our now 100% digital author.

©Jean-Michel Ponzio

Characters drawn from natural reality

His approach is totally different for the characters he proposes in his albums. Apart from a few robots here and there, all come from "real life" situations. His family, friends and neighbours: all of them are 'characterized', so to speak, over 150 since he started! If this is a very rare approach in France, it is much more common in the United States and serves as a source for the hyper-reality aimed at by author Ponzio. "It allows me to experience a vast range of emotions and feelings for my characters and I also avoid doubling up certain character-types. We can observe that the unconscious (or conscious) canons of beauty are to be found regularly in several authors' works, e.g., a beautiful woman will be portrayed identically in 80% of all albums sold", underlines Jean-Michel Ponzio. In his case, two blonds of the same age will be quite different from each other, just as real life blonds walking the streets are different. "It is almost impossible to have such a differentiation if you do not use real life models for inspiration", he recalls. He

does his sketches from live persons, wearing stuff that makes it easier to get their details of light, movements, positions, etc. And to preserve this character diversity, after wearing out his immediate neighbours and friends, he is into 'casting' for the future albums! This personal mix leads to an astonishing blend of 3D and reality, lending a highly realistic atmosphere to the scenes and stories.

Moving around a 3D decor at the UTC Innovation Centre

Contrary to what we might think at first, the techniques used in fact shorten rather than lengthen the time top produce an album. "I now need about 4 months to prepare one album, compared with one year previously, generally speaking", he reckons. One the 3D decors area ready, they can be used, adapted to new situations, from album to album. Jean-Michel Ponzio has a real data base, which grows as each new story is added. In the framework of CyberBulle, he is making available one of his space-ships. Visitors will be able to walk the space-ship gangway to observe the ship's details.

"This is a first for me. I forwarded the 3D data base to UTC. Now we just have to get our digital display tools compatible with each other, but indeed I'm curious to imagine myself walking round one of my own virtual decors!" Regardless of this announced performance, the ultimate objective of Jean-Michel Ponzio, remains in paper Comic Book production. "Fully digital publications are still in their early days, even if the editors are talking about them more and more. Moreover, contracts today now carry a provision covering digital exploitation of the contents, even if my own publications have not yet been adapted a digital format". Jean-Michel sees a possibility here to integrate new information sources that will enrich the story-line. To bring on line new frames, new speech bubbles as the story progresses, or add in a new sound background to keep the suspense going … "These new perspectives are interesting, provided they represent real progress and are not just fashion-driven. What we should not do, however, is to seek to transform comic books into cartoons, but rather aim at creating a novel form of medium and this could generate a new category of public." ∎

CONSULTATION

When libraries
go digital

The libraries in Compiegne, associated the Cyber Bulle festival, certified as digital libraries in the framework of a new programme launched by the French ministry in charge of Culture (the aims of which are to encourage and develop reading skills in France).Consequently there has been considerable investment here, in digital reading supporters, and a general public – of all age brackets it has been noted – has been attracted. Vincent Haegele, Director of Compiegne's Libraries speaks with Interactions.

©VirtualSensitive

What digital devices or systems has Compiegne already installed?

Since 2010, we have made available various digital devices and offered training workshops to make the digital supports more available, more accessible. For example, a dozen or so e-readers can now be borrowed by the registered readers. To help them use the pads, we propose e-reading workshops. The workshops have proved very successful, not only for the young generations! Elderly persons also find them attractive, and not only because there is a built-in magnifying factor that make the fonts easier to read. We have also acquired a tactile table. The complicated bit is that we must make these devices "live and prosper" beyond just making the announcements. That is why we found the format of the CyberBulle Festival convincing: our aim now consists of implementing a return on experience (ROE) and for this, we shall attend this Festival which throws useful light on the relationships between digital and reading worlds.

And what are you proposing at the CyberBulle festival?

We are working in synergy with the Festival organizers to join forces in terms of our respective skills. We shall financially support the Festival and indeed will host part of the exhibits with, for example, author-illustrator Pascal Croci. The real attractiveness of CyberBulle is to blend together the real and virtual worlds. We aim to demonstrate that UTC and the city of Compiegne work together and develop projects that benefit a greater number of persons, such as with the programme "Tous unis pour la Cité" [All together for the City]. Our library welcomes a lot of students and houses various student projects: art photography shows, theatre rehearsals, exhibition-demonstrations of their latest research results in augmented reality and 3D … Furthermore, we now have a project that relates to the possibility of staying open late on Saturdays, with the help and presence of a group of UTC students!
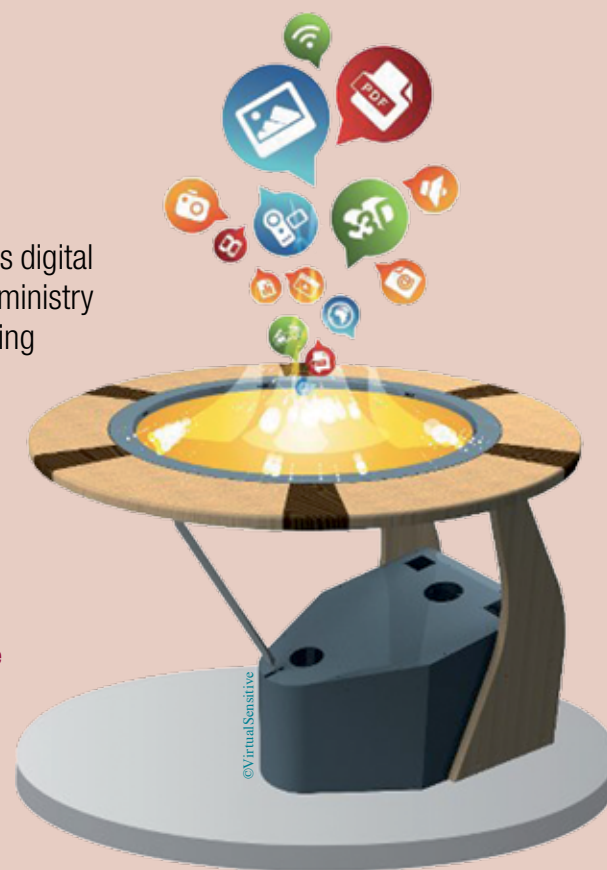
What are your perspectives in the framework of the Digital Libraries (France) Programme?

Phase 2 of the programme is about to start. We shall be adapting our furniture to better accommodate digital reading and we shall be proposing reading pads at each library seat; within the year, our Internet portal will allow readers to borrow (dematerialized) works more simply than at present and this will raise even further the value of the works we possess. This does not run counter to reading a classic bound book. All too early, we saw some libraries cutting off access to paper supports and then changing their mind and policy. The important thing is to satisfy clients' expectations, orienting them to the most suitable supports. We are witnessing an ongoing revolution and, if you like, we are today in the middle of the ford: from here on, it is our duty to correctly pursue digitization and to do this we must constantly invent and imagine the future. ■

Facts & figure for French libraries and digital impact

Level of data processed : **86%** for all libraries

Libraries with an Internet site : **38%** of all registered libraries

On-line catalogue access : **35%** of all registered libraries

Digital services offered (a sample of the 1 477 libraries with an Internet site) :

3%   On-line registered customers

45%   Access to a reader account

37%   On line reservations of works

« Les Bibliothèques numériques de référence et la coopération numérique de l'Etat état des lieux et perspectives » [Digital Libraries (France) and State digital co-operation for sites and perspectives], February 2013.

A new look at
the innovation process

Jérôme Siméon, Executive Director General for Application Services at Capgemini, heads a team of 8 000 whose job it is to integrate computer science systems, no matter the sector of application. "This has been a growth activity in the Capgemini group for years now, and this constantly calls for innovation that benefits our clients", says Mr Simeon by way for an introduction.

How important is innovation in your sector?

Along with industrialization, innovation is the main differentiating element in the computer science market place. We can observe a market-place with a concentration of actors, a necessity if you want to preserve a critical mass to be able to contribute with these elements. Computer science systems and their applications – over just a few years – have progressed from artisan to industrial conceptions. In just 20 years, they have revolutionized work and production methods, which are now being increasingly outsourced. But what is even more significant is the revolution that is taking place today. New technologies are constantly coming on line and are transforming our daily lives. In our business jargon, we call that the SMACT effect: S for Social Media, M for Mobility, A for Analytics and Big Data, C for Cloud and T for Things, viz., the object-world Internet. Our job is to help the entrepreneurial world to use these new technologies opportunely, in the right place and to meet their objectives of contributing the company's value.

How do you accompany your clients in this process?

Innovation per se, from a strictly technological point of view has limited value. It must be integrated to the corporate processes to attain a targeted value. It must be incorporated into a larger model combining industrial capacity, co-operation among the teams and the company's eco-system. Without co-operation, innovation is a mirage with no future, which neither improves the competitiveness of the company nor its market position. To enhance the integration process, Capgemini places its trust in its human resources, insisting on continued training, on taking brave even risky decisions and on a renewal of teams to integrate dynamic young graduates who offer fresh visions, novel ideas, new behavioural attitudes … to assist the change from ideas

to projects, Capgemini has instilled specific work methodologies and equipment, e.g., the Lab'Innovation.

Capgemini has set up 7 Lab'Innovation units in France. What do they exactly?

In France, yes, we have 7 Lab'Innovations units in Suresnes, Nantes, Rennes, Lille, Lyon, Grenobles and Toulouse. Altogether, there are some 30 such Capgemini units round the world. They are networked and enable collaborative work with both clients and partners. These units are demo-intensive places, conducive to creative ideas, to prototyping and serve to accompany the digital transformation of the clients. It provides an excellent opportunity for young people to express their potential all the more so that in these Lab'Innovation units they can work with start-ups who often bring a "disruptive" point of view.

Capgemini proposes fast-track workshops for its clients to implement novel applications

What is your strategy, in terms of innovation?

I always demand three things from my teams: 1° proof of ROI (return on investment) while preserving their all-important right to make mistake; 2° a specification for the use value of any innovation; 3° speed. On this latter point, speed is essential if you want to remain efficient in a digital world and this implies having and using efficient tools and methodology in our offices.

What advice would you offer to students in innovation?

Anything and everything is possible! Discard all your mental barriers – envisage progress just like the horizon, it is always on the move and elusive. ■

INTERNATIONAL

Innovation : *can China follow suit ?*

Jean-François Pierrey has been an 'expat' in Shanghai for a year now. In China he has the title of 'Director of sales and engineering' for Federal Mogul, installed there to develop the capacities for manufacturing brake liners for the local market-place. He shares with Interaction readers his vision of innovation as he sees it in the Middle Kingdom.

"**China is still a developing nation, with all the disparities that this qualification implies, notably in terms of innovation and technologies between the two major cities Shanghai and Beijing and the rest of China", says J-F. Pierrey by way of an introduction.** And what is the most striking feature? Their relationship in regard to the mobile phone which is used here for everything, all the time. "In this immense city, where many citizens in fact come from other places in China, especially the younger generations who come here for their studies for their first job and who let themselves be guided by their smartphones to see where they are, to find a shop, and address. They possess a limited knowledge of their environment, do not create any relationships with their neighbourhood, the shop-owners. This highly impersonal rapport suffices to explain – at least partly – the success of mobile phones for the least well-off fraction of the population", explains Jean-François Pierrey. Owning a smartphone a social marker. The phenomenon is to be compared with the architectural or technological achievements such as the 650m high tower* in Shanghai's downtown area which will be inaugurated soon, or the 'mag-lev'** train that connects airport and city centre at 450 km/hr.

Taking initiatives or being contradictory: almost inexistent factors

"Achievements like these embody China's supremacy. They carry a strong symbolic strength that is important in the rivalry opposing economic systems: the Shanghai Tower, for example, is erected in a position between two other towers, financed respectively by the USA and Japan. China today wants to prove that it is capable of doing as well if not better than other world powers – even if it is only possible due to the country's immense economic power and not to Chinese know-how or creativity", explains Pierre-François Pierrey. His analysis, over the year he has spent in Shanghai have allowed him to identify two profiles: the majority, those who take no initiatives and do not contradict others and strictly obey their hierarchy – even if the orders given lead to a dead-end! and a minority who literally swim in decision-making circles and who want to succeed whatever the cost. "This can be quite destabilizing for Westerners, inasmuch as we are used to seeing teams who forward their operational concerns or queries as they progress and will not wait for new or counter-orders from the boss to change the options. It is a feature that is not related to the intrinsic educational level of the Chinese but is rooted in their culture – in no way decreasing their lust to learn, or their job-motivation. Indeed, it is sometimes difficult to work with this minority who - without going as far as becoming deceitful or dishonest are nonetheless capable of adopting any ploy, if it help them to succeed".

A "Top Ten" of Chinese manufacturing concerns

In China, Federal Mogul want to produce brake liners for the local market. Beyond the world-scale manufacturers already installed locally, there are some 40 Chinese manufacturers. "We established a Top Ten rating in terms of innovation criteria, financial solidity, export strategies… Some of these manufacturers, including BYD (Build Your Dream) have a real innovation policy. BYD makes all-electric vehicles in response to China's large-scale environmental problems. However, they are some 25 years behind Western equivalents in terms of industrial strategy. For example, they continue to make some of the parts needed internally; the same parts have been outsourced for a long time now in Western competing companies," adds Pierre-François Pierrey by way of an illustration. However, they may catch up rapidly, via the obligation now for foreign companies to sign partnerships with a Chinese company if they want to set up a business in the Middle Kingdom. "The Chinese excel in their desire to attain existing high-level know-how. But the question subsists: will the country be able to follow suit, in terms of innovation? I am not personally convinced, given the strong cultural blockage that inhibits creativity." ■

"From the president's desk" following

graduate as engineers capable of integrating societal and ecological parameters in the future engineering options and decisions, 2° our opening of satellite courses in Chile, as we had done previous with UTSeuS in China, in a long term logic of building a global and digital university of technology, to take account of competing cultural diversities round the world … 3° pursuing our commitment to Innovation and Entrepreneurship, notably through the recent inauguration of the UTC Innovation Centre. In all these areas, UTC accepts the ongoing changeover from training engineers embodying the spirit and the will to build … to the spirit of entrepreneurship,

innovation, start-ups, employment and new activities. Our future graduates will contribute to ensuring that innovation becomes the main driving force in engineering training packages ad to promoting creativity and innovation per se as factors conducive and essential to economic prosperity, leading to sustainable growth which calls for long term investments, viz., in research and in training. At the same time we must recognize that we because we live in uncertain, complex times with ecological, economic and even moral crises, we must also train engineers and managers who not only can think and prove strategic, i.e., a capacity to manoeuvre

in the ambient complexity but also promote the strategic content of their decision-taking processes and in their interpretation of the worlds and our environment.

That is part of what I shall be saying at the coming UTC Open Day … and a few other things too, which have been covered to in this issue of Interactions. ■

Professor Alain STORCK
President and Vice-Chancellor, UTC

Reinforcing the links between
UTC and the Vallee d'Aoste Polytechnique

In North Italy, the Vallée d'Aoste is a French-speaking autonomous Region. In this cross-roads between Italy, France and Switzerland, the Polytechnique University Turin (PUT) has a satellite campus located in the town of Verrès. The links between PUT and UTC go back to the year the latter was created and this year, 2015, an international summer will be organised on the theme 'new methodologies for development of innovative products from the FabLabs.

A delegation from Vallée d'Aoste visited UTC on December 10, 2014 returning the UTC visit with a small team from the Innovation Centre. The PUT delegates visited Compiegne's Techno-Park (Parc technologique des Rives de l'Oise), the Institute of Mechatronics and the UTC Innovation Centre. These bilateral meetings pursue three objectives: 1° to reinforce the academic co-operation in terms of training; 2° to propose a joint consolidation project via a summer school and 3° to share views on a more consistent European co-operation scheme.

A certified UTC training package in Vallée d'Aoste ?

In terms of training, UTC and the Polytechnic University of Turin already offer a double diploma – an agreement renewed in 2014, whereby graduates will be awarded the UTC engineering diploma and a Master's degree in Science from PUT. Andrea Guerra, born in Italy, obtained this double degree in 2010-2011 before pursuing with a Master's degree and a European thesis at Compiegne on the subject of a tactile table TATIN-PIC as used in preliminary collaborative design processes. The TATUIN table was presented to the Italian delegation who consequently proposed a research unit on this theme, to be financed by the Vallée d'Aoste autonomous Region. In regard to university co-operation, a certified UTC training course at Verrès attracted the attention of the Italian partners, either as a physical satellite of UTC, or distant courses

and continuous training schemes. "Our collaboration with UTC goes back a long time and is perfectly consolidated. It enables us to acquire new skills and to share 'best practice' in numerous fields of industrial engineering", explains Enrico Vezzetti, research scientist and lecturer at PUT who co-directed Andrea Guerra's thesis work. Thanks to this consolidated co-operation, UTC and PUT are sketching the contours of reinforced collaboration, starting with an international summer school, planned for summer 2015 on the theme "new methodologies for the development of innovative products" which draws its inspiration from FabLab practice. "Fast prototyping is a computer-aided fabrication method that groups a set of tools that allow the operators to prepare intermediate representations of product design: digital models (in the geometric connotation), mock-ups, prototypes and pre-series. This theme was chosen because of its high contingency level and potential social impact. "From a practical point of view, the school attendees will learn the basic techniques for the efficient use of several devices used in rapid prototyping: laser scalpels, 3D printers, 3D scanners, micro-controllers. They will also learn to use creativity-intensive tools such as brain-storming sessions or TRIZ and will benefit from an introductory course on commercial aspects to invention", details Andrea Guerra. The summer school will last two weeks – the first in Italy end June, the second at UTC early July - and will be coordinated by the UTC Innovation Centre, open to Bac+3 to Bac+7. The long term objective of the school will be the creation of a Master's degree in technologies and design tools for innovative products. In the autonomous Region of Vallée d'Aoste,

there is a strong demand for higher education technical training courses. "Our aim is to build links between UTC, the PUT satellite at Verrès and the industrialists in the Vallée d'Aoste who have a need to develop their production methodologies to attain a European or even a global scale", underlines Enrico Vezzetti.

Synergy for European projects

From a mid-term point of view, the two territories endeavour to comply with European strategies for the promotion of 'francophony', visits like this can open the way to new co-operations for future call for projects in forthcoming multi- and bilateral European programmes. "Italian universities prove very efficient in preparing and defending European projects – an area in which France would still like to make progress and where it is deemed that some synergy can be attained", underlines Andrea Guerra. A joint programme is being prepared in the framework of Erasmus+. The sectors "cloud computing" and mechatronics could also leader to more advanced coordination agreements. Both territories already have mechatronics research establishments. Among the paths that could initiate these projects, there could be a sharing of the competition of Innovative projects, which also exists at PUT. Coordination here between the two establishments could offer a European dimension. ■

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LEAN MANAGEMENT

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A lean management approach for innovation is attracting interest from a growing number of actors. A day was specially devoted to this subject "Lean Development serving R&D Excellence", held at the UTC Innovation Centre, end-October 2014 with over a hundred enterprises, the UTC students, PhD students, research scientists and lecturers. Interactions interviewed the organisers Julien Le Duigou and Benoît Eynard, from UTC, as well as Stéphane Fugier-Garrel, with the advisory agency KL Management, who co-organized the event.
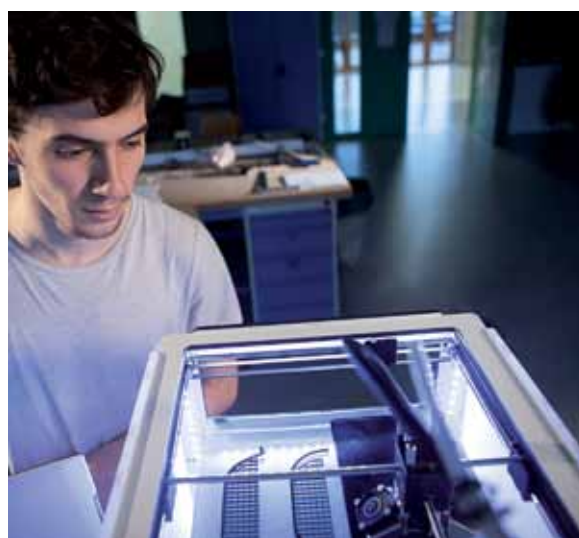
"95% of the future production cost of a product is fixed as and when the preliminary design is finished.** How can we continuously improve R&D process performance levels, team management, processes and products?" Here we have a vast question, to which members of the Board, the enterprise players and academic representatives were seeking answers. "It is a set of agile and operational management methods that can facilitate exchange and data handling as to focus on high added-value activities. The basic idea is to rethink the client, supplier and end user's roles, to improve the processes and avoid being dispersed in activities that do not offer any advantage to the clients", Benoit Eynard, research scientist a d lecturer at UTC and Director of the French Mechanical Engineering Association (AFM) group called "Tomorrow's Factory: mechanical and production engineering". Stéphane Fugier-Garrel adds: "In a lean approach, the aim is to reduce time to market, i.e., the time needed between the concept/idea and the marketing of the final product, to gain new growth leverage".

From "Lean development" to "visible planning"

Lean management was a process invented and developed, in particular, by Toyota after WWII, has become common-place in our factories today, in the production lines and team management, where the margins for progress are now limited. We also see it spreading out to other areas such as the service sectors. R&D will also benefit: "R&D teams often work in a way that is largely disconnected from the rest of their company structures, whereas the investments in R&D are considered strategic in France. We are pursuing research and an original form of practice on this field of activities to continuously improve the operational excellence of R&D teams. There are three main axes: product design, team management and continuous process improvements", details Stéphane Fugier-Garrel. "Our work relates to field experience and team practice as well as the implementation of very advanced management systems. This generates a constant dialogue among the various parties that represent the enterprise; an example, with a world leader cable manufacturer, who aligns the various R&D workflows with the manufacturing processes, serving as a visible planning, on which each party, actor can visualize and share clearly expressed information. It works well and allows the teams involved to demonstrate the importance of joint project management", concludes Stéphane Fugier-Garrel.

Project: a training and experimental platform at UTC

The idea behind this special day came from an exchange between UTC and the advisory agency KL Management, with some student internships proposed by the agency to UTC students. "We wanted to organize a special day to confront academic and consultancy views on the subject, adding in the results of returns on industrial experience", explains Julien Le Duigou, research scientist and lecturer in mechanical system engineering at UTC. As a result, a rich Day programme was prepared "ranging from R&D phases to product industrialization", with Bostik, Latécoère and Valeo, or the workshop on GD3 (Good Design, Good Discussion and Good Dissection), as well as on Lean Engineering and eco-design … The day closed on a perspective framework: "The main R&D problems and Tomorrow's factories". This concept of future factories is one of the research axes of a scientific and technical group within AFM, partner to the Day. With KL Management, UTC entertains the ambition to define a co-operation agreement on the theme lean management. Beyond another edition for this seminar, planned for October32015, and the setting up of a think tank in the UTC Paris offices, the creation of a training and experimental platforms is being prepared on the theme of industrial excellence and organizational innovation. "This platform is designed to reinforce UTC expertise in the areas of industrial engineering and will help enhance professionalism by the UTC students, while exploring a high potential research field that covers the theme off future factories", underlines Benoit Eynard. ■

A *new* 'Bescherelle'*for the economy

Philippe Lemoine, President of the Action Modernités Forum and the New Generation Internet Foundation, was commissioned early 2014 by French finance Ministers Pierre Moscovici, Fleur Pellerin and Arnaud Montebourg, introduces the subject of the Report as follows: "Can France profit by adopting new business models that arise through digital technologies. The title of the Report is "A new grammar for success, digital transformation of the French economy will provide some answers" and Philippe Lemoine present the Report's findings and conclusions at the Phitico seminar, organised at UTC Jan. 19-23, 2015.

Philippe Lemoine, previously Chairman and CEO of LaSer up to 2014, after co-chairing the Galerie Lafayette Group (1998-2005) **explains:** "the Report is based on 4 methodological decisions: a co-drafting process with over 500 persons associated with the work; analysis of the findings, to avoid an endless, shallow catalogue and to identify new rules in a digital world; action-intensive, which is essential in digital activities with added value for brave entrepreneurs/inventors, which is a notion that is often sacrificed in France and in Europe generally, to the gods of real politics". The Report carries 180 proposals in its 327 pages, with 9 projects for immediate application, 53 transverse measures and 118 recommendations for the coming three years. Philippe Lemoine has a propensity for his term "grammar": indeed, the report sets out the rules of a new grammar applicable in economic competition, rules that decision-makers should know and follow if we are to express ourselves intelligently in a new digital paradigm.

Big data: the advent of 'super-contracting'

The report offers three main conclusions, beginning with the in-depth transformation that digital technologies are introducing in every economic sector. "What we call the 'digital transversality' has major consequences, notably in terms of manpower. In the coming 15 years, every second job will be changed completely", reckons Philippe Lemoine. The other major change will be in the issue of innovation and its origins. Innovation used to be the privilege of company structures but today it is the innovator-designers who are out in front. "Private persons have moved massively to adopt digital tools, running from smartphones to pads, and they use them to innovate, notably when it comes to economic models: collaborative economics, circular economics, etc. The enterprises are now striving to catch up on the new models", stresses Philippe Lemoine. "They must continue and double up their efforts in terms of use of the new tools and models to stay in the race". Philippe Lemoine also insists on the data angle, big data, "the new oil of the 21st Century", that certain enterprises – still not very numerous – are now integrating into their business models, sometime in a perplex and clumsy manner. "Those companies that become familiar with big data techniques and tools, companies like Google, Facebook, or Amazon will still be in a position to exercise a super-contracting attitude and policy, based on data analysis and will be able to corner most of the added value, putting the classic companies in a difficult spot", Philippe Lemoine adds by way of a warning.

## Only one company less than 30 years old in the French 'Top 100'

The second conclusion we draw is that the ongoing transformations offer more opportunities than risks for France. "I we accept that private person designer/innovators constitute a major economic asset, then France can be seen to have an excellent educational system, is well equipped in digital tools, with a good and relevant legal system (the so-called law on computer science applications and personal data protection), etc." says Philippe Lemoine but he hastens to add "French companies are not adopting digital tools as readily or as rapidly as the French themselves. 60% of the French has already made an on-line purchase, but only 11% have made one on-line sale. The advertising sector is still marginal in France, both in terms of volume and growth rates, a long, long way behind the British." The Report also underlines the high quality of today's generation of French start-ups, who combine innovation and the digital world and therefore have multiplied their chances of enjoying a fast growth rate. "the economic elevator must be reassessed in France: in over 100 of the main French companies, only one is less than 30 years old, viz., Free [recently introduced telephone operator]. In Europe, there are 9 and in the USA, 63. The age of the company, however, is a guarantee that there will be a better understanding of the changes as and when they occur. Despite several "good practices" noted for companies like Schneider Electric, the Postal services, the SNCF railroads, Air Liquide, Axa, etc., in terms of open innovation procedures or in use of a FabLab, very few companies have moved into what we call "digital disruption". Thus, the Alstom teams simply were not prepared for one of the requisite expressed by General Electric: what was the digital added value of the current dossiers? There must be an effort undertaken to ensure that the top echelon staff of our major enterprises 'wake up' and start the transformations".

A Universal Digital Exhibition

The third a final conclusion of the Report relates to the need to reinforce governance tools in France. Philippe Lemoine advocates that there be an annual digital summit, along the lines of the German model, that will bring together the public authorities, the enterprises, 'civvy street', etc. "The purpose (among others) is to free the brakes that exist at a European level (fiscal measures, copyright law, equipment, big data, etc.) and links should be made with public utility foundations such as Wikipedia, Mozilla, etc. "We should aim a creating Universal Digital Exhibition! As far as the public authorities are concerned", concludes Philippe Lemoine, "the two main priorities relate to changes in employment and the combination of the digital and ecological worlds". ■

The Bescherelle is a proven French grammar book, known to millions, first published 1913!
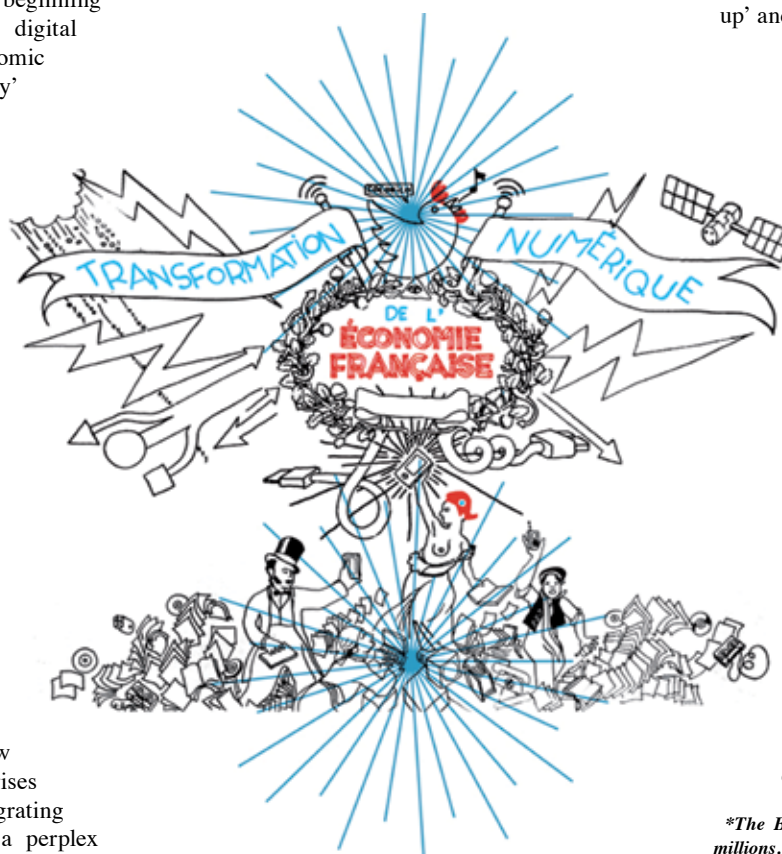
On its 40th anniversary, UTC rewrites its history, in comic strip style : **In the heart of the Future**
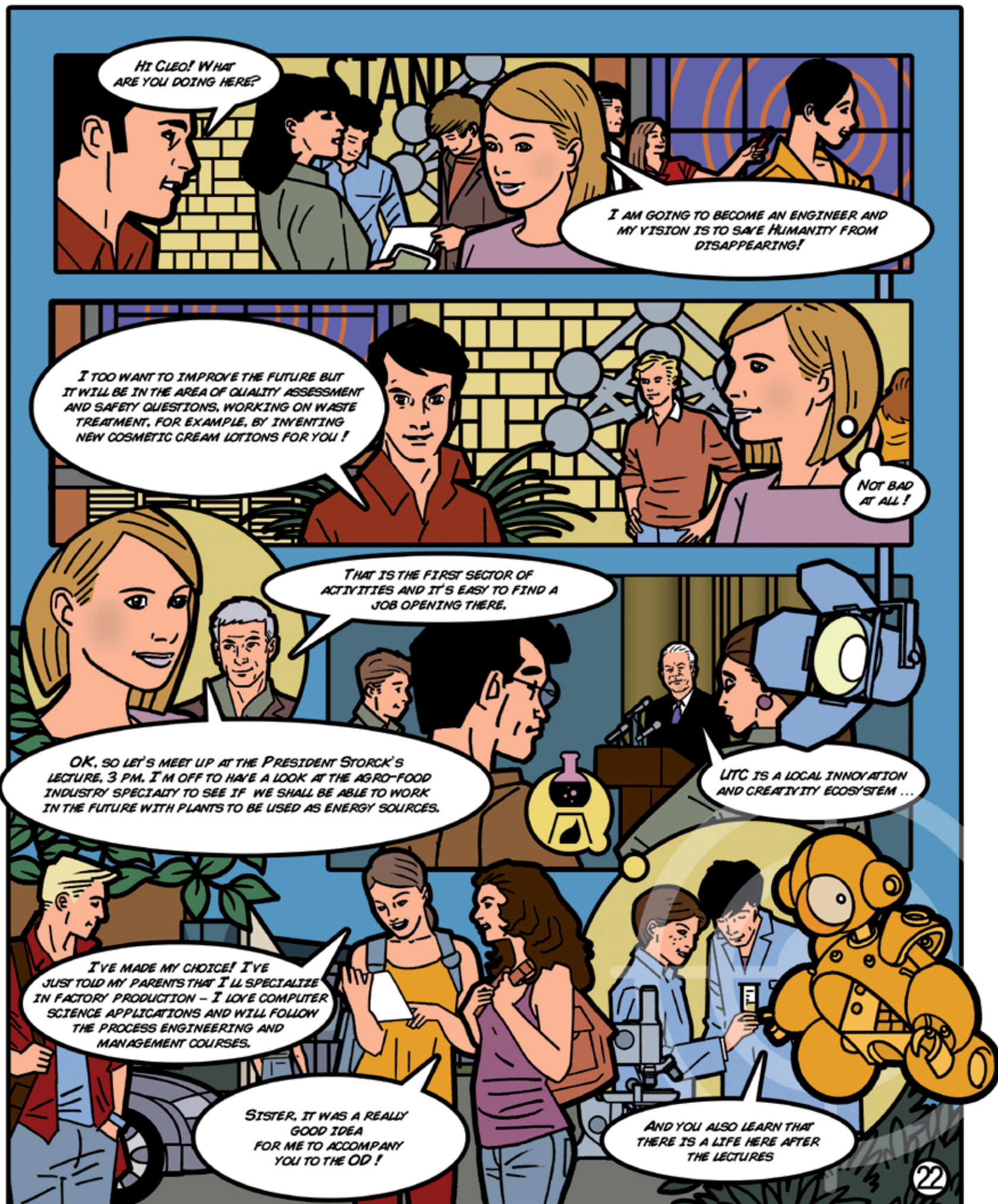
Curiosity and unending self-questioning

Thierry Moussu is Digital Intelligence Manager for the Pierre & Vacances Center Parcs Group. He came originally from Pau (SW France), arriving at UTC in 1994, from which he successfully graduated in the elective specialty Chemical Engineering, before turning rapidly to digital communications.

While at UTC, Thierry Moussu, given his affinities with sectors close to innovation management and strategy, continued after his degree award to follow a DESS diploma course on "Technology and Innovation Engineering". His first job, as of 1998, was with APTA Conseil [consultant company] – obtained via a UTC friend's uncle – which consisted of carrying out marketing studies for the automobile sector, one of his passions. He spent nine years with APTA, in various positions: Head of the computer sciences and services unit, then Manager for survey studies and Customer Relations Manager. Thierry Moussu then moved on to become Survey Analytics Manager at Opinion Way and then, likewise, at OTO Research. "In this Digital 'Comm' Agency, my job consisted of managing and overviewing the on-line surveys and the first e-reputation studies"; he was then recruited as their Social Media Survey Analytics Manager by Linkfluence, a company set up by UTC graduates. At that point in his career, Thierry Moussu was totally immersed in on-line survey analysis allowing him to approach the world of digital marketing. In 2013, he joined DigitasLBi Paris, as their Social Media analytics Manager, with the assignment to create a new business offer of real time marketing, first for Nissan France, followed by Nissan Europe. "The concept here was to make use of current news and events that bore some connection with the corporate trade-mark, with affinities for the marketing policy targets, leading to creation of marketing content to support products on the market-place", adds Thierry Moussu. "Numerous company are now adopting this new form of marketing thrust, but when I started it really was the pioneer days in France". However, he did not stay overlong with DigitasLBi Paris: the Group Pierre & Vacances Center Parcs recruited him to supervise their 'digital intelligence' operations.

Metrology for digital activities to improve policy targeting

"My objective was always to move from the survey agencies to the announcers and orient my career to digital marketing. I have a real passion for this segment of the Web world, where everything evolves so fast, where nothing is definitive. Monitoring here is very important, and you have to update and 'reinvent' yourself on a regular basis: continuous innovation here satisfies my own strong and constant desire to learn things", details Thierry Moussu. On a daily basis, he is in charge of measuring all the Group's digital activities, from 'main-street', general public campaigning to more precise, targeted actions. "My job was indeed created to measure the

spinoff of actions developed by then team specially in charge of social media such as Facebook®, Twitter® or Instagram® and Linkedin®, etc. What are the benefits to the Group of their work? How do you measure the 'notoriety' they generate? When we measure things, the aim is to improve on the situation and guide the decisions". For the past five months, he has been 'glued' to the screens, following and assessing click rates, pages visited, user profiles … These operations are carried out in conjunction with bloggers, to follow the reactions of given communities and to target more precisely the communication aspects. One must also adapt the work as a function of the country. The Group is present in France, in Germany, in the Netherlands and in Belgium and the way social networks are used differs from country to country. "In the Netherlands, everything is on Twitter®; in France the preferred network is Facebook®. We therefore have to adapt the visual and the associate messages, the stories, to the local country habits".

Creating convergence among the Group departments

While the metrology and analytic work is currently in its test phase, the aim is to set up convergence and an improved integration among the various Group Departments: Direct Marketing, Customer Relationships, etc. "Today, when a complaint is lodged on Twitter®, you have to fill out a form for the department concerned and draft a reply for the complainant. In the long term, the tools we are preparing will enable us to gain in fluidity and time and better serve and answer our final customers, the clients", underlines Thierry Moussu. With some 350 customer generated messages a month for the Group's activities in three different countries, the task before us is well worth our spending time and efforts to improve matter! The Group, moreover has launched 12 workshops in the field of digital communications, and must be able to monitor and measure what is happening. "For all students who are attracted by this sector, my personal advice is that they indulge in endless curiosity. What we cannot achieve today will assuredly become possible tomorrow, or the day after! You must remain open minded and know how to self-question your work and ambitions, otherwise you will rapidly be overtaken by events. UTC taught me a lot in this respect and opened my eyes and mind sufficiently early to a multitude of areas and domains of knowledge, and that alone provide an excellent base-line for my own developing thoughts and ideas". ∎

BIO EXPRESS

1994 : admitted to UTC
1998 - 2007 : Aptalys Group
2007 - 2009 : Survey Analytics Manager, Opinion Way
2009 - 2011 : Survey Analytics Manager, OTO Research
2011 - 2013 : Social Media Survey Analytics Manager, Linkfluence
2013 - 2014 : Social Media Analytics Manager, DigitasLBi Paris
2014 : Group Digital Intelligence Manager, Pierre et Vacances Center Parcs Group