meets the European Commission

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New Trends in Innovation

In collaboration with the Innovation Policy Unit of the Directorate General for Research and Innovation

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On November 13th 2012 the day after the TEDx Brussels, TEDx Brussels speakers were invited by the European Commission to discuss the new trends in innovation... here is what Innovators have to say!

1. From Innovation to Entrepreneurship

Panel: Xavier Damman (Founder Storify) - Bart Becks (Internet and media entrepreneur), Mitch Altman, Inventor, Teacher, Co-founder of Noisebridge, and CEO of Cornfield Electronics; Andrew Keen (author The Cult of the Amateur) - Moderator: Steve Goossens (Accenture)

More hacker spaces! More availability of data! More money invested in young talents!

- Big companies are not always the right ecosystems for young people to innovate; the right ecosystem is your own start-up. The problem is that in Europe, as a start-up you have only two possibilities, either you are profitable and you survive or you are going to fail. In the Silicon Valley, instead, you have a third possibility: you can be bought by a bigger company. This reduces the risk for investors. Since there is little possibility for being bought in Europe, young people don't start their own companies.

- Europe should also become an open platform for doing business: open access for data from the whole continent and one single rule to create a European company.

- Europe needs a platform with full open access to all scientific data without great expense.

- We all have a creative drive within us, but little opportunity to explore it in our busy lives. This is why hacker spaces are so important: they provide opportunities for anyone to explore this inner creativity. Hacker spaces are spaces where it is possible to try new things, including failing. An important asset of the United States culture is that
there it is not catastrophic to fail. This is not the case in Europe. This is the reason why hacker spaces are great places for changing culture. For instance, China and Egypt government help hacker spaces, pushing people to be creative in their lives, even failing.

Is innovation benefitting all?

- Let’s pay attention to the confusion made between creativity and innovation: creative people are struggling in this economy. Innovators are just doing business. There is nothing creative in hacking. Innovation has become a cult. Innovation is self-destructive. This economy is not benefitting the creative people. The idea that there is a direct relation between having an innovative world and a good world is not always true. This idea is conveyed by Google. Innovation does not necessarily improve society, it can be disruptive. The impact of innovation is so fast, business cycle moves so quickly. There is no link between innovation and democracy: there are few and fewer companies dominating market places. Innovation is dominated by large companies, and creates inequalities.

- However, innovation gives opportunity to all to do the things that they love: innovation gives access to the means of production, and makes it affordable. There are no more excuses not to be productive.

- It is true that large corporations want to maximise profit but apart from that there are a lot of people doing what they love and create at the same times jobs for their communities, at a smaller local scale.

- We can compare innovation to a muscle: it enables you to do something, it's neutral, what you do with it is what counts. Our role is to make sure we use innovation for the right purposes.

Good ideas should get good funding!

- There is a lot of capital here in Europe and also a huge potential for innovation. But funding is not allocated strategically: 1) local entrepreneurs have mainly access to local funding, they then become a local firm but there is no market for local companies. 2) Access to subsidies requires resources to fill in the paper, only big companies can do that. This is the reason why in Singapore authorities have set-up the "convertible equities" system: instead of giving subsidies, government gives you four times the money you obtained from Venture Capitalists. 3) Public authorities should do
everything to help business establish, and reduce administrative hurdle, have a guiding office which helps you go through regulations and legislation. 4) Tax shelters are also good incentive for companies to invest in start-ups. 5) Government should also ensure that fundamental research is well funded.

- A new trend in getting funding is "crowd funding" such as the crowd funding platform in Europe "Angel.me". It could be a solution for start-ups to raise equity. The difference is that you involve your customers from the beginning and it works very well thanks to the social networks. For companies it can be a start fund, but it can also be a mean to create an ecosystem around them. Indeed, when crowd approves a product, it can get easier access to Venture Capital or bank loans.

- There is a positive side to crowd funding is that it is a great opportunity because compared to VC you keep the key of your company. The negative side is overfunding, and not everyone is prepared for that. Some have had nervous breakdown.

- But crowd funding is a classic form of disintermediation: the real experts in investments are Venture Capitalists and one would rather have an investment from these experts rather than getting it from someone who "likes a fancy watch". It is likely that there will be a massive backlash on crowd funding because most people don't understand the risk. The reality is that 95 % of business fails.

- Instead we need to challenge wealthy people in Europe to invest in their communities and young people: Europe has capital but we need a cultural revolution.

- "Wasting money" is extremely important in getting ideas to the market. Start-ups are wasteful, a vast majority fail. It's like looking for a black cat in a black room and sometimes there is no cat. The problem is that in European corporation every single spending is metered, and it is difficult to go from creativity to innovation in these conditions. American companies are tolerant to waste; they understand they cannot work on a shoestring budget. In Europe, we are becoming too efficient, and we need to embrace waste.

Immigration drives innovation!

Silicon Valley is driven by its immigrant communities from Asia, Europe, Latin America, Middle East, and Africa. Europe should bring more talented people from these regions of the world.
2. Rethinking Learning

Panel: **Stuart Firestein** (Chair of Columbia University’s department of Biological Sciences); **Greg Gage** (Neuroscientist, Co-Founder Backyard Brains); **Pierre Pirard** (Teacher and author “Vous n’êtes pas des élèves de merde”); **Zoe Laughlin** (Material Scientist and Co-Founder of the Institute of Making/UK) - Moderator: **Ben Kestner** (St John’s International School)

**Learn through experience in & out of the classroom!**

Panellists concluded that:

- the learning process does not happen only in the classroom;

- pupils should be given time and real experiences;

- after schools programmes where kids can do their own learning should be promoted;

- appropriate funding to carry on activities outside school should be available.

- Experiments are sometimes better than lecture to pass on the information but with the condition that you don't tell the student what to do, but she has to discover by herself and report back to you.

**New ways of learning**

- Integrating technology in classroom changes relationship between student and teacher, as shows the EU funded project on School of tomorrow. There is a rebalancing between who owns the knowledge and who is learning. E-learning is not a silver bullet. The problem in Europe is not massive access to education, but to deal with an increasingly heterogeneous group of students.

- E-learning can be used for the flip classroom, according to which students can make use of the online material to acquire the knowledge they need, so that more time can be dedicated to discussion in the classroom, instead of presenting the material itself.

- E-learning should be considered as just another tool rather than the answer: certain activities such as ability to concentrate, absorb yourself in something over a long period time and really develop intricate trains of thoughts or understanding of
complex issues requires time and space that sometimes some medium are not helpful to help you do.

- Students need to be empowered by their learning. Passion is the key, we need to find out what students want to learn, what skills they need, the role of teacher has changed, and he has become a coach.

- Different pupils may need different types of education. We have teachers but not mentors anymore, and we need to build relationships with a mentor, which is not allowed by e-learning.

3. E-health: a brand new world

Panel: Alan Greene (Chief Medical Officer Scanadu); Angus Thomson (Director of vaccination Advocacy at Sanofi Pasteur); Jeroen Raes (Head of Research bioinformatics, Systems Biology and Microbiology, VIB) - Moderator: Wim De Waele (CEO iMinds, former IBBT)

Empower the patient

- Medicine is undergoing an irreversible shift. Up to now, only the doctors had knowledge but since the internet revolution people have access to knowledge also about their health. People look for self-medication and self-diagnosis. It is inevitable, and nobody can stop them. However, patients do not always have the context to deal with information you can get.

- Doctors should thus embrace this changing behaviour and help patients contextualize the data they can obtain on the internet; for the simple reason that scientists are used to deal with uncertainty of things. The locus of medicine is thus transferring from hospitals to home where people have access to medical information.

- But are physicians coming out of school sufficiently trained to deal with this new situation? are there new disciplines needed? New forms of training? How will this evolve?

- People starting now medical schools should be thinking in a participatory way and be ready to give people context to patients going online. The opportunity of this
revolution is that physicians have a wider reach for people. We need physicians in social media, talking to the public, getting them back in the public health debate. Some physicians don’t know how to interact with patients. This is also why we need an interdisciplinary approach with behavioural scientists to understand what drives people out there, how do we engage with them to adopt the behaviours that will keep them and society healthy.

Create pan-European health database

- Related to this revolution is the development of self-diagnosis tools. Not only these tools could give information to the patients but they are also meant to get the information of patients' body quickly to their physicians and their peers so that they can learn together.

- If everyone in the world had a monitoring tool it would offer a gigantic source of information for researchers. Of course this type of monitoring should be limited to mundane disease, on which patients can take action on them.

- But today this is far from being true. The problem is that everyone stays in their niche. EU grants try to get people together, but it's not happening enough. The ideal would be to have a pan-european network of all persons with monitoring tools, database, and clinicians all connected.

- They are already doing that in the USA, there is a smartphone application for people with flu and they are asked to report every week what is their temperature and other body parameters. All this information is gathered in a central database and you can see it on a map across the USA.

- Clearly, in Europe, there is a problem of scale: from a statistical point of view, the population side in the studies have to be bigger to be seeing any effect. The US has a big advantage because it's one country.

- Rules and outdated regulations can sometimes be obstacles for healthcare providers to develop their technology. In addition to that, in Europe there is also a fragmentation of markets. The question is whether Europe is well positioned to be a market where
personal medicines monitoring tools can be fostered. And also, are clinical trials regulations adapted to that use of technology?

- It is true that digital storing of medical records regulations is different in each Member State. This is a big issue, and **EU efforts should be made to make a central database at least for professionals.**

- In addition, if the monitoring is done for research purpose, you don't need to have all Europe covered, but you can use samples. If you monitor for public health purposes, then you have to disseminate that innovation to the whole population.

- Achieving bigger population requires to work across borders in Europe.

- The important also is to access the people and we need to think how to pass the message in a way that will change people's behaviour.

### 4. Smart Cities

**Panel:** Alexander D’hooghe, associate professor in Architectural Urbanism MIT - Bruno Zamborlin, Designer, Technologists, Researcher, funded by EU project on E-learning for music - Interactive arts - Yasaman Sheri, Industrial designer in biological future, Teacher at SU University, Board member Fluxmedia – **Moderator:** Simon Giles: Accenture on smart cities, how to reshape cities.

- Urban designers have a new look at how cities are functioning. They first look at cities in term of an economic ecosystem and then think of what kinds of lifestyle do they need to deliver in order to make it an attractive place to live. Urban designers do not limit themselves anymore at paying attention to how buildings look like, but integrate other aspects such as the way people will interact.

- In the past, urban forms changed radically in response to industrialisation, then to motor car invention (with roads, development of suburbs). The change in urbanism following the digital revolution is still not clear, let alone the effect of biotech and nanotech revolutions.
- Although there is still no clear view of the impact of these changes on urbanism, what is sure is that technology like remote sensing will be part of a package of solution for the future rather than the only solution.

- In the past 20 years, there is a rise of scale of design: entire cities are being designed from scratch. What they have in common is a comprehensive approach. The consequence is that they need enormous amount of data for designer to make them a reality. New scale of design means also new tools!

- For instance, in urban design, there are four different layers of knowledge:
  - Hydrology/topology
  - Real estate development
  - Transportation
  - Technology (embodied energy footprint)

Integrating these four layers of knowledge represents a huge challenge for the future.

- Cities can be considered as the best technology humans have created. Cities can be seen as an ecosystem where building and infrastructure could talk to each other and the people. Cities residents should have access to technology that allows them to be involved in the governance.

- But can we design such an intelligent ecosystem, or should we let it emerge? Systemic changes can be done by regulatory frameworks. Design can be done through projects, demonstrations, but it's hard to design an entire system. It would be better to design spaces that can allow new design to emerge: leave space for serendipity.

- Smart cities are also about participation: the tools that we need to create need to be accessed by everybody. The "sound" itself can have a role in the city: it may help people to interact with the physical space. Thanks to technology, sound can be seen as an input, and not only an output. It's for instance very powerful to help disabled people.

- Although it's true that technology plays an important role in future cities, it is not the only important aspect: cities of the future should also be defined by social aspect, business models, governance model innovation, and finance model innovation.
- In other words, it is important to focus on the outcome rather than on the input, so to focus more on the result we want to achieve rather than on the technology we want to use. In addition, technology changes very rapidly, whereas when you build an infrastructure, it stays for years.

- This is the reason why we should think about cities as evolving rather than being sustainable which implies some static state: how to reinvent existing space in the city. Think also about the social aspects: how elderly would live with younger and families.

- An attractive political narrative for smart cities should be created, and we should not fall into techno-fetishism, and focus more on storytelling.

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**SPEAKER’S PROFILES**

**Mitch Altman**

Mitch Altman has been putting together electronic hardware in his own unique style for nearly thirty years. He was an early virtual reality pioneer at VPL with Jaron Lanier and one of the very first Silicon Valley start-up founders, establishing RAID controller company 3Ware in 1997. Altman’s latest role has been as a founder of the San Francisco hackerspace Noisebridge, where he helps people learn how to solder and program microcontrollers. Altman was a leading light of Maker Faire and Make magazine, designing their most popular kit, Trip Glasses, parting ways with them earlier this year in protest at their acceptance of a DARPA grant. (He also left VPL when the company started winning military contracts). His coolest invention is the TV-B-Gone, a one button remote control for shutting off TVs in public places.

**Xavier Damman**

Xavier Damman is the founder of Storify, an internet start-up company that helps people curate their social media stream into coherent narratives. Xavier moved from Belgium to San Francisco in 2009 to work on a different company called Publitweet whose concept was that the marginal voices on social media channels deserve to make their way onto mainstream media. He’s also the founder
of HackDemocracy a meetup group which tries to think about the ways technology can impact democracy for the better. He’s a firm believer in sharing, in spreading good ideas and in the power of technology to make the world a better place.

Bart Becks

Bart Becks is a Belgian internet and media entrepreneur. In 2010, he launched SonicAngel together with Maurice Engelen (Praga Khan & Antler Subway Records). One year later, SonicAngel has an artist roster of 35 artists across 5 countries, and is rapidly expanding across Europe and the US. SonicAngel has expanded its crowdfunding model internationally, as well as to other domains. In 2011 and 2012, the company also launched FilmAngel.tv, FashionAngel & Angel.me, respectively for the film & video, fashion & startups entrepreneurs. Previously, Bart Becks was CEO of Belgacom Skynet, and thereby at the forefront of free and high-speed internet, online media and digital television revolutions. Next, he became chief innovation & new media of the SBS Europe Group, which was acquired in 2008 by pan-European media giant ProSiebenSat1. Since then he was involved in a series of startups in Europe and the US, such as Netlog, Storify, InThePocket and Zamante. He is also Chairman of he Flemish IBBT, the innovation center for ICT & Media, as well as member of the board of RMB of the Frechspeaking public broadcaster RTBF.
Andrew Keen

Andrew Keen is a British born entrepreneur and author. His book The Cult of the Amateur sets out his views of user-generated content websites such as YouTube and Wikipedia. Keen's view is that by worshipping the amateur individual - bedroom filmmaker or prolific blogger, part time Flickr photographer or war tourist tweeter - we're losing sight of carefully considered media production techniques that have evolved over decades, along with the intelligent professionals who operate in far flung places to bring us the news. Keen reckons Wikipedia is the online home of inaccuracy and crowdsourced content can never be as reliable as pre-digital information channels. He argues fluently for media literacy, challenging the mantra of the digital generation, the user is not king.

Greg Gage

Greg Gage is a Neuroscientist and co-founder of Backyard Brains, an organisation teaching kids and amateurs neuroscience through hands-on experiments to see and hear brain signals from living neurons and also via robotic control of ordinary cockroaches. He's also a TED Fellow. The way he reveals neuroscience to school kids is through the SpikerBox, a small rig that helps kids understand the electrical impulses that control the nervous system. He's passionate about helping students
understand how our brains and our neurons work, because as he says, we still know very little about how the brain works -- and we need to start inspiring kids early to want to know more. The inspiration for Greg’s work as an educator came from a realisation that the advanced equipment he used as a PhD student could be made at home for a fraction of the price, in less than a day.

Pierre Pirard

Pierre Pirard is a teacher and the author of “Vous n’êtes pas des élèves de merde”. Pierre started his career at Leo Brunett, then joined Procter & Gamble to become Senior Vice President at Reckitt Benckiser. In 2009, Pierre decided to leave the private sector to become a teacher in a secondary school in Brussels. One year later, he published “Vous n’êtes pas des élèves de merde”.

Zoé Laughlin

Artist and maker Zoe Laughlin is a co-founder/director of the Institute of Making and the Materials Library project. She holds an MA from Central Saint Martin's College of Art and Design and obtained a PhD in Materials within the Division of Engineering, King's College London. Working at the interface of the science, art, craft and design of materials, her work ranges from formal experiments with matter, to materials consultancy and large-scale public exhibitions and events with partners including Tate Modern, the Hayward Gallery, the V&A and the Wellcome Collection. Her particular areas of interest are currently The Sound of Materials, The Taste of Materials and The Performativity of Matter, with outputs ranging from theatrical demonstration lectures to the making of instruments and features on both radio and television.

Stuart Firestein

Dr. Stuart Firestein is the Chair of Columbia University's Department of Biological Sciences where his colleagues and he study the vertebrate olfactory system, possibly the best chemical detector on the face of the planet.Aside from its molecular detection capabilities, the olfactory system serves as a model for investigating general principles and mechanisms of signaling and perception in the brain. His laboratory seeks to answer that fundamental human question: How do I smell?

Dedicated to promoting the accessibility
of science to a public audience Firestein serves as an advisor for the Alfred P. Sloan Foundation's program for the Public Understanding of Science. Recently he was awarded the 2011 Lenfest Distinguished Columbia Faculty Award for excellence in scholarship and teaching. His book on the workings of science for a general audience called Ignorance, How it drives Science was released by Oxford University Press.

Alan Greene

Pediatrician and father of four, Dr. Alan Greene completed his pediatric residency program at Children's Hospital Medical Center of Northern California and served there as Chief Resident. In 1995, while at ABC Pediatrics in San Mateo, California, he launched DrGreene.com, cited by the AMA as "the pioneer physician Web site". He is the author of Feeding Baby Green, Raising Baby Green and, From First Kicks to First Steps.

He appears frequently in the media including such venues as the TODAY Show, the Dr. Oz Show, Good Morning America, Fox and Friends, The New York Times, the Wall Street Journal, USA Today, Time Magazine. In 2010, Dr. Greene founded the WhiteOut Now movement aimed at changing how babies are fed starting with their first bite of solid food. In 2012 he launched a worldwide campaign aimed at changing the practice of Immediate Cord Camping To Optimal Cord Clamping or TICC TICC.
Angus Thomson

Angus THOMSON is Director of Vaccination Advocacy at Sanofi Pasteur. After his PhD in molecular oncology, he worked 7 years in Japan as a medical journalist and editor. First working freelance, to facilitate his Aikido practice, he subsequently spent 4 years helping establish a medical news agency in Tokyo, and then moved to Paris in 2004 to manage their European operations. He worked 2 years at Sanofi Pasteur MSD in Scientific Affairs in Lyon before joining Sanofi Pasteur, just across the road. A key objective of his current role at Sanofi Pasteur is to drive a fresh, multidisciplinary research approach to understanding vaccination acceptance. This research will draw upon new insights into decision making from the cognitive and social sciences, social networking, group behaviour, and social and traditional media to develop a broad evidence base which will help all stakeholders to better build and maintain public trust. Angus has published and lectured on vaccination acceptance and the evolving immunisation environment.
Jeroen Raes

Jeroen Raes is a bionaut, he researches the human microbiome. What he's discovered in his lab at the Flanders Institute of Biology could herald a major breakthrough not just in gastro-intestinal medicine, but in our fundamental knowledge of the human biology. It turns out that there are only three different types of gut bacteria and, just like blood groups, the three types are totally independent of race, sex, age or diet. Such a baffling finding leads to more research of course and Raes is currently testing his idea on a larger group. The implications for Crohn's Disease or obesity could be dramatic.

Alexander D'Hooghe

Alexander D'Hooghe is associate professor in Architectural Urbanism at MIT. He conducts a research group called Platform for a Permanent Modernity. Alexander runs the Organisation for Permanent Modernity, an architecture and urban design firm seeking radical solutions to the crisis of urban sprawl by seeing a place for the monumental in urban design. To this end they've been working on a massive landfill project in South Korea and a masterplan for the conversion of Reykjavik airport. Amid all this big thinking is a series of smaller Scala domestic and civic architecture projects in Belgium, including Police
Stations, private villas, Fire Stations and a park. In this time of political and economic uncertainty, and in the face of social turmoil across Europe a new and ambitious vision for the urban landscape is sorely needed.

Yasaman Sheri

Yasaman Sheri is Teaching Fellow, Design Track at Singularity University and Designer, Board of Directors at Fluxmedia, Hexagram. Fluxmedia is a research-creation network located at Concordia University in Montreal. The network is made up of artists, scholars, graduate students, and research labs engaged with interdisciplinary research across art and the life sciences, including biology, digital and electronic media art, art/sci, and transdisciplinary art practices. Research projects initiated through Fluxmedia explore how emerging technologies and biomedia intersect with new modes of artistic practice and cultural theory. Fluxmedia is a space of exploration, working with science and art techniques to reflect on the socio-political, aesthetic, ethical, and environmental dimensions implicated through the use of new bioimaging and visualization technologies.

Yasaman is an industrial designer interested in the biological future. Emerging technologies and the fuzzy end of innovation is her passion, where she can dream up the future. She is an advocate of co-learning, co-design, and human centered design strategies.
Bruno Zamborlin is a technologist, researcher, musician and designer. He's been working on a joint PhD in computational technologies between Paris and London, exploring new methods for gestural interaction and its applications in performing arts and the creation of new musical instruments. Bruno is interested in the topic of Interactive Machine Learning and the possibility of allowing the artist to interact with the entire supervised learning process and the creation and design of his own gesture vocabulary. The early result of this research is Mogees, which uses contact microphones to turn any touchable surface into a musical instrument. Bruno made a video illustrating Mogees that's had more than 300,000 views, furthering his mission to open up gestural vocabulary to impromptu actions and personalization.