Press release

The Teratec Forum will review on future technologies and applications

What are the impacts on our lifestyles?

Paris, xx June 2022 - Technologies that until recently were pure fiction are now making significant advances in many areas. In the very near future, by 2030, they will revolutionise and transform our daily lives. The Teratec Forum, the European meeting place for digital technology experts, is organising its 17th edition on 14th and 15th June on the École Polytechnique campus. On this occasion, a workshop dedicated to the digital innovations of the future will be one of the highlights of these two days.

On 15 June, from 9 am to 12.30 pm, the workshop entitled "Technologies and applications of the future" will bring together various experts to take stock of the technologies of tomorrow. The first part will present important technological innovations: megadata storage on DNA, 6G and metavers. The second part will be devoted to applications and uses in three major sectors: materials (4D additive manufacturing), health (bio-printing) and energy. **Decoding** :

Archiving digital megadata on DNA: what solutions for tomorrow?

The DNA storage strategy, the idea of which came from the American physicist Richard Feynman, who won the Nobel Prize in 1965, is intended to be much more durable, much more compact and much less energy-consuming than the digital storage methods currently used (DVD, hard disks, flash memory, etc.).

Storage on DNA would allow a higher density by a factor of ten million, prolonged preservation by a factor of ten thousand, with almost no power consumption. The required technologies exist. However, to become economically viable for archiving information, these technologies still require progress that will be made within 20-30 years

"Because we are in an era where our society is consuming more and more data and in a few years we will face a saturation of the so-called conventional storage methods, we must consider solutions that are in line with our future needs. We have been working for several years on more viable, faster and more mature alternatives and DNA is one of them. This highly innovative approach could be in place by 2035 and could be applied to several sectors that require 'cold' storage. This is the case, for example, of the INA in the cultural sector, which could use this storage process because of the low cost involved, etc., or the banking sector, which is obliged to store their clients' data for almost 10 years, etc. It is clear that the archiving of digital megadata is taking a new turn," **explains François Képès - Académie des Technologies, Académie d'Agriculture de France - who will be speaking at the workshop**.

Evolution towards 6G: scenarios for 2030

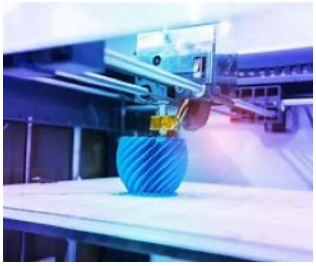
The future 6G network platform will enable innovative new services by connecting a world that has become cyber-physical, including merged reality, massive digital twins and connected intelligent machines. These services require high-performance communications and new requirements for security, privacy, resilience, coverage, mobility and network-level computing structure.

On this occasion, we will answer various questions:
What are the latest developments in mobile networks? What are the potential new use cases in cyber-physical systems? And what are the resulting requirements for future 6G networks?

Moderated by Tobias Ley, Head of AI, R&D Ericsson France.

4D additive manufacturing or the possibility to program 3D printed objects

With a market estimated today at 6.5 billion euros and a growth rate of 20% per year, the economic interest of 3D printing is no longer in doubt. And 4D? Where do we stand?



4D printing allows a printed object to adapt to its environment and evolve in a controlled manner by the application of stimuli. It becomes possible to print functions, or to incorporate pieces of code into the structure of the material... Although the growth of 4D printing will foster the development of new scientific and technical knowledge associated with self-assembly, self-adaptability and self-repair processes, this technology is still young and several scientific and technical barriers remain.

The Teratec forum will look at the potential of the technique and the challenges we face. Potential applications and possible market developments will also be discussed.

"The development of 4D printing will boost the growth of new technologies based, for example, on self-assembly, if printed elements can be assembled autonomously without human intervention at a specific time and place, will have a major impact in architecture, design and fashion. The self-adaptability of printed structures will allow sensing and actuation to be combined within the same material. This will have important applications in bioengineering for organ and tissue printing. The combination of 4D printing with IOT will allow the development of adaptive and connected sensors for the smart city. Last but not least, self-repair, if printed objects have the ability to detect and repair defects (wear, manufacturing) themselves, reducing the need for invasive procedures, will have applications in the defence and automotive fields.
Thanks to its applications, the 4D printing market should reach one billion euros/year by 2030," **explains Giancarlo Rizza - Laboratoire des Solides Irradiés (LSI), Institut Polytechnique de Paris (IPP), CEA/DRF/IRAMIS, CNRS - who will lead this workshop.**

In-situ bioprinting for the repair of burns and chronic wounds.

Amélie Thépot, Co-founder and President, LabSkin Creations, will speak at a workshop (15/06 from 11:30 to 12:00) on the **in situ bioprinting platform for the repair of burns and chronic wounds.**

She will review the promising results of the BLOC-PRINT project, which demonstrated the proof of concept of in situ skin bioprinting and its clear benefit in terms of the speed and quality of the healing obtained. The BLOC-PRINT II project proposes to go even further by improving the performance of this breakthrough therapeutic technology, in order to allow it to reach preclinical validation under satisfactory safety and implementation conditions.

The market addressed in this new project also goes far beyond burns, since it includes all types of skin wounds requiring a skin graft, whether acute or chronic.

More information Ter@tec (teratec.eu)

About Teratec :

Teratec is a European competence centre for high-performance digital simulation, bringing together more than ninety companies, research laboratories and universities. It was created on the initiative of major industrialists with the aim of bringing together all industrial and academic players, suppliers and users, providing access to the most powerful systems, and promoting and increasing the attractiveness of the field by encouraging economic development. https://teratec.eu

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