Forum Teratec 2021

Unlock the future !

22-23-24 JUNE | DIGITAL EVENT

The European annual meeting for experts in digital technologies
Simulation – HPC/HPDA – AI – Quantum computing
June 22-23-24, 2021 – A Digital Event

June 2021

Innovation, competitiveness, environment, health…

For its 16th European meeting, Forum Teratec unveils modeling, forecasting and personalization that become central for tomorrow's major economic challenges

Digital simulation, high-performance computing (HPC), massive data processing, artificial intelligence and quantum computing have become inevitable to foster the development of competitiveness and innovation in companies.
These are technologies often seen as nebulous for the average citizen, yet turning everyday life upside down and society as a whole.
Cybersecurity, health or climatology... take a look at some concrete applications and likely most significant for neophytes, with technical and application workshops from 16th Teratec Forum and its 100% digital version being held next June 22, 23 and 24.

HEALTH

Optimal vision for every one

Seemingly insignificant and almost invisible, a pair of glasses is a medical device suited to each person. Their design intersects mathematics, optics, vision sciences and scientific calculation.
The challenges of eye correction are to design unique lenses in a fully automated way and to model their performance, in order to offer one optimal vision solution to hundreds of millions of individuals.

Calculation of ophthalmic lenses: providing optimal vision to every one
Sébastien Fricker, Engineer / Masters' Degree,
Section Head Optical Design, European Centre of Innovation & Technologies, Essilor International
Part of Workshop *Communicable diseases or visual disturbances* (Tuesday June 22, 16h-18h)

Mathematical modeling to better understand epidemic risks

Mathematical modeling has been widely used to better understand epidemics in recent years. Nowadays, the increase in computing capacities allows the development of sophisticated models paralleled with implementation of epidemiological investigations.

While protecting populations treated in health care institutions during epidemics, reactive proceedings of control in place cause considerable disorganization and high costs for hospitals. In order to optimize this implementation, it is necessary to understand and integrate the variability and characteristics of forces at play for the hospital population facing these epidemics.

In this context, modeling allows to analyze epidemics but also to simulate divergent scenarios towards identifying optimized control strategies.

Agent-based modeling to support epidemic risk study of SARS-Cov-2 and its control in hospital environment

Lulla Opatowski, Epidemiologist Researcher, Institut Pasteur

Part of Workshop *Communicable diseases or visual disturbances* (Tuesday June 22, 16h-18h)

CYBERSECURITY

Time, as central piece for security and company data exploitation

With regulatory changes, electronic signatures, the factory of the future, connected objects, Big Data and the importance of cybersecurity, time factor is becoming fundamental and central for security and company data exploitation.

Failing to count on a reliable and legal time reference, flaws in cybersecurity appear that were previously unsuspected being linked to quite high vulnerability of used sources, first and foremost with satellite systems (GPS, Galileo, Glonass, Beidou, etc.).

Time-related Cybersecurity

Sébastien Téot, Director, SCPTime

Part of Workshop *Cyberthreats, welcome to the new world!* (Wednesday June 23, 14h-16h)

CLIMATOLOGY

Thermal imagery for cities and the environment

The Thermocity project aims to use satellite data servicing cities in order to help them deal with climate change. Its objective is to set up data, methods and processing capabilities that respond in a generic way to their specific problems. Spatial thermography is a rich source of information, making it possible to measure and understand the urban heat islet effect in summer and to map heat loss in winter. By combining derived products of spatial origin, we are going to create indicators to assess and prioritize public action for the development and adaptation of the city.

Space Climate Observatory: Thermocity, Spatial thermal imaging dedicated to metropolitan areas

Vincent Lonjou, Sales Representative, CNES
and Aurélie Michel, Research Engineer, ONERA

Part of Workshop *Satellite for Climate and Environment: New perspectives for digital-twins* (Wednesday June 23, 16h-18h)

Predicting the behavior of vegetation fires using very high resolution remote sensing
Recent extreme wildfire events highlight the urgent need to design modeling systems that allow a better understanding of fire dynamics, triggering and fueling factors on event scale (atmosphere/fire interactions, meteorological and biophysical factors).
For its purpose, a new assimilation set of approach capable of representing uncertainties on simulated as well as observed fire fronts is to be implemented, via the assimilation of remote sensing data, and infrared images in particular. It will provide a framework for digital twins to study fire-related atmospheric processes such as pyro-convection, and to anticipate possible variations in fire behavior related to climate change.

The future of wildfire modeling,
guided by very high resolution sensing data
Mélanie Rochoux, Senior Researcher, Cerfacs
and Marielle Jappiot, Research Engineer, Inrae
Part of Workshop *Satellite for Climate and Environment: New perspectives for digital-twins* (Wednesday June 23, 16h-18h)

Forum Teratec, 16th edition – 100 % digital

Bringing together more than 1,300 professionals and the best international experts in digital simulation, High Performance Computing (HPC), massive data processing, Artificial Intelligence and Quantum Computing, the Teratec Forum highlights the technological and industrial dynamics of digital technology and the key role played by France in this field in Europe.
The participation and testimonies of major European industrialists, presentations of leading technology companies in these fields with diversity and high level of technical workshops, the representativeness of exhibitors and innovative offers presented, the involvement of French and European public authorities, all reveal the importance of such major technological and economic issues closely tied to these new technologies.

The 16th edition of the Teratec Forum will take place on June 22, 23 and 24, 2021, in a 100% digital format.
In the morning: the Keynotes, with Plenary Sessions and Round Tables held sequentially, will focus on the technological challenges of high-performance simulation and the diversity of uses of HPC with the participation of key representatives from the political, economic and academic worlds, with leading international industrial users and leading technology solution providers.
On afternoons, Technical and Application Workshops led by main market players, recognized experts and major users will provide an update on emerging technologies and new application sectors in Simulation, HPC/HPDA, Data-Learning (AI) and Quantum Computing around six major themes: Quantum Computing, Storage, Cybersecurity, Health, Systems, Space data & Environment.

For 3 days, a virtual exhibition will bring together the main players in the digital Industry. Manufacturers and software publishers, suppliers and integrators of hardware, software and services, universities and research laboratories, competitiveness clusters and public organizations will present their latest innovations in high-performance digital technologies.

For more information:
www.teratec.eu/forum/index.html

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