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GIANT High Level Forum 2017



The Longueuil–Montréal Innovation Ecosystem welcomed the GIANT High Level Forum 2017 from September 24 to 26. Some 120 participants from 21 countries in 26 delegations attended this important forum. "Innovation and Smart Living," the general theme of the forum, was divided into three subthemes. The first focused on "Innovation and Smart Transport," the second, on "Innovation and Smart Energy," and the third, on "Innovation and Smart Society." Each session was followed by an animated panel of knowledgeable guests, discussing, sharing experiences and exchanging with the audience.

On Sunday, attendees were invited to Espace pour la vie (Space for Life), a space comprising the Biodôme, Insectarium, Botanical Garden and Planetarium, where nature and science merge to better understand and protect our planet's biodiversity. There was the new Ecosystems Networking Dinner in the evening, during which the different ecosystems and their members were presented.





The opening ceremony and the first session on "Innovation and Smart Transport" took place the next morning, at the Conseil national de recherches du Canada in Longueuil. It is the Government of Canada's premier research organization supporting industrial innovation, the advancement of knowledge and the development of technology. At the ceremony, city and local government representatives as well as GIANT leaders all highlighted the importance of such a forum, where a wide variety of players in the field of research, higher education, industry and politics, from some of the world's most innovative ecosystems, could converge to reflect on issues related to this year's theme, "Innovation and Smart Living."

After the first session on "Innovation and Smart Transport," participants had a chance to discover one of five different aspects of the Longueuil– Montréal innovative ecosystem. Attendees chose from among several destinations to see the ecosystem's creativity at its best. These included Lufa Farms, with city rooftop farms; the Centre technologique en aérospatiale, a transfer centre of aerospace technologies; the Institut de recherche en électricité du Québec, an important research centre on electricity; Cirque du Soleil's world headquarters; and Moment Factory, a multimedia studio with a full range of special production expertise.

A special gala evening was held on Monday night and featured a surprise cruise on the St. Lawrence River to a private island where dinner was served. On the way back, a full moon and the illuminated cities and bridge offered quite a spectacular view.

On Tuesday, the last official day, Sessions 2 and 3 were very animated with the subthemes pertaining to smart energy and smart society bringing inspiring presentations and engaging exchanges in the ensuing panels. Something new at the forum this year: private meeting rooms were made available on Wednesday for participants wishing to take this added opportunity to exchange further on another level.

Celebrating the World's Leading Innovation Ecosystems





The High Level Forum was initiated in 2012 by CEA Tech, which is the Technology Research Unit of CEA (the French Atomic Energy and Alternative Energy Commission) and which is managed by the Innovation Campus GIANT of Grenoble (France). This annual event is attended by an international community of high-level executives, decision-makers and policy-makers from the fields of education, research, industry and public authorities.

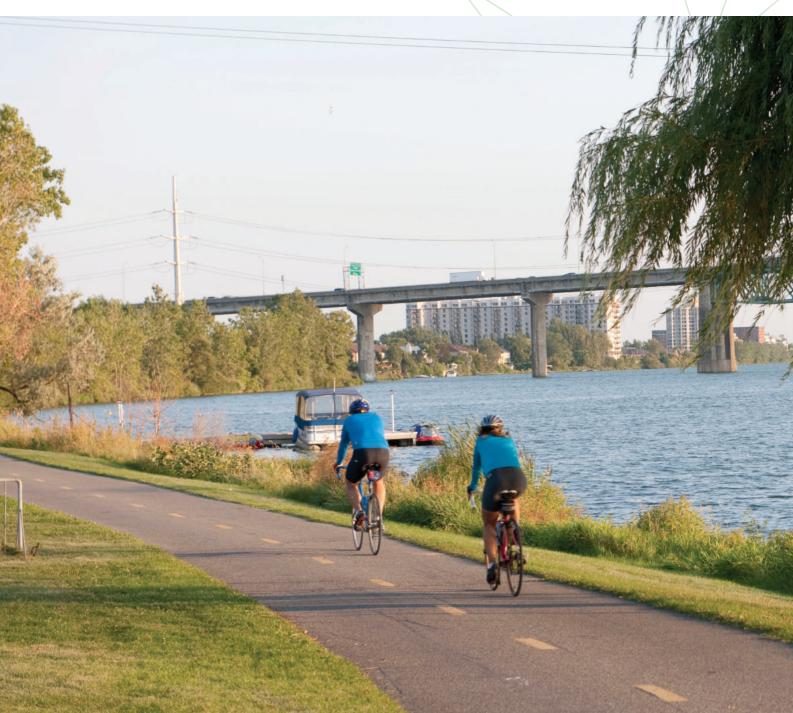
The High Level Forum now counts more than 26 participating campuses from around the world (America, Asia, Europe, Middle East, Africa) that are internationally recognized as leaders in innovation. The High Level Forum has earned increasing recognition as a truly remarkable international event devoted to innovation.



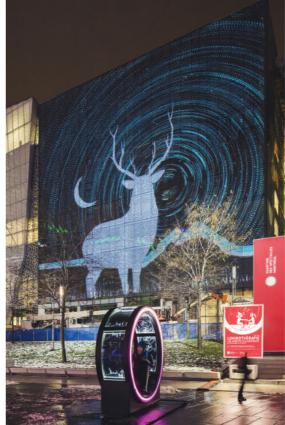
The main objectives of the High Level Forum are:

- To share policies, strategies and experiences with regard to innovation management and promotion between leading campuses
- To encourage and strengthen collaboration between the world's most influential innovation ecosystems
- To develop common initiatives for maximizing the social and economic benefits of the innovation programs from the participating campuses

Welcome to the Longueuil–Montréal Ecosystem







The oldest artifact found in the area known today as Montréal is about 4,000 years old. Nomadic people roamed the area for thousands of years, attracted by the game in its forests and the fish in its rivers. Then, around 1300 AD, some adopted a sedentary life on the island. On October 2, 1535, the first Europeans reached the area. They were on an expedition from France led by Jacques Cartier. He sailed inland hoping to find a West passage to Asia. His expedition was stopped by the rapids in front of Hochelaga, a fortified village where approximately 1,000 St. Lawrence Iroquoians lived in some 50 longhouses surrounded by fields of squash, beans, corn and tobacco. Cartier climbed the adjacent mountain, took in the view and named it Monte Real in latin.

Today, the region boasts a growing population of over 4 million. Its strategic geographical position, numerous research centres, skilled labour force and world-renowned companies make Longueuil-Montréal a complete innovation ecosystem, where smart living, joie de vivre and creativity are an integral part of the lifestyle. This ecosystem fosters collaborative innovation in strategic sectors such as aerospace, big data, gaming, artificial intelligence, cleantech, smart transportation, sustainable environment and social innovation.



The Greater Montréal area is, of course, well equipped with state-of-the-art research infrastructure. Some 170,000 students, including 28,000 foreign students attend its eight worldclass universities and facilities. Mentorship organizations abound for start-up and growing companies in a variety of sectors. It is a living and attractive environment for people wishing to evolve in an animated and energizing milieu de vie. Longueuil-Montréal's creativity, comprising the outstanding diversity of talent and people from all over the word, offers a vibrant cultural scene, global leading quality of life and inspiring smart living.

High Level Forums in the World



LONGUEUIL-MONTRÉAL, Innovation and Smart Living



CALTECH CAMPUS Pasadena, California, United States
Commercialization of Research Results

2015

TSUKUBA, JAPAN

2012 | 2014 | 2016 | 2018

GIANT INNOVATION CAMPUS GRENOBLE, FRANCE

Policies, Governance and Financing of Innovation Ecosystems Promising Innovation Areas

Collaborative Creativity Innovation for Tomorrow's Infrastructures

Delegations coming from all around the word!

ASIA

Japan: Tsukuba South Korea: Daejeon Taiwan: Hsinchu Thailand: Bangkok

Singapore

AMERICAS

Argentina: Buenos Aires (INTI)

Brazil: São Paulo

Canada: Longueuil–Montréal

Vancouver

Mexico: Guadalajara

United States: United States: Albany Atlanta (CIT) Chicago (Argonne) Los Angeles (Caltech) San Francisco (Stanford) North Carolina (UNC)

EUROPE

Austria: Vienna Belgium: Leuven

France: Grenoble (GIANT)

Finland: Helsinki (VTT) Tampere

Germany: Dresden (TUD)

Italy:

Rome Milan (Politecnico)

Ireland: Cork–Dublin Limerick Luxembourg **Poland: Warsaw** Spain: Bizkaia Sweden: Lund

Switzerland: Lausanne (EPFL)

United Kingdom: Harwell Oxford

MIDDLE EAST

Israel: Haifa (Technion) Saudi Arabia: Thuwal (Kaust)

North Africa Tunisia: Sfax South Africa **SESSION 1**

Innovation and Smart Transport









Dr. Harri Kulmala has a Ph.D. in industrial management from Tampere University of Technology. In 2005, he started as an associate professor at Lappeenranta University of Technology. His career as a scientist ended in 2008, when he left his position as a Research Professor at VTT Technical Research Centre of Finland to start as the CEO of FIMECC Ltd., the first high-volume, industry-driven PPP implemented in EU countries. In 2016, digitalization led to the merger of DIGILE Ltd. (ICT, media and telecom) into FIMECC (manufacturing). Dr. Kulmala continues as the CEO of new DIMECC Ltd. He is a fellow of the Technology Academy of Finland and the Royal Society of Arts.

DIMECC innovation ecosystem brings autonomous ships to the world

DIMECC is the European Community's first industry-driven (not only in categories, but also in management set-up) public–private partnership company specializing in sea transport. Smart transport is an essential part of the concept of a smart city. There are many benefits to adopting a strategy to accelerate the transition. Being an internationally recognized sustainable smart city,

Tampere is attractive for businesses and citizens. Its goal is to increase the quality of life, well-being and safety of citizens, as well as to ensure the digitalization of city services with sustainable solutions.

Finland is basically an island, so transport ships are an important part of Tampere's business environment. In this field, DIMECC is already involved in creating a very autonomous future. Sometimes, the future may seem very scary, as we may feel that one day we could be replaced by artificial intelligence.

The Baltic Sea is a somewhat internal sea with heavy maritime traffic. It has been established that some 80% to 90% of the accidents on ships are caused by human error. DIMECC believes that artificial intelligence, in making ships more autonomous, would greatly improve the margin of error causing accidents and make a real difference.

But this program cannot be built alone. Some shipping companies and organizations, such as the United States Navy, have joined the DIMECC Sea Program in a common effort to improve safety through autonomous transport. Baltic countries such as Lithuania, Estonia, Latvia and others are interested in our Sea Program and are willing to create new innovative rules concerning maritime transport, an essential implementation element.

Although this new program may not necessarily lead to increased profits in the short term, many companies, even from the more traditional manufacturing industry, have progressively joined our innovative Sea Program. The latest target set by DIMECC is to have autonomous ships in the Baltic Sea before 2025.







Dov Ganor is a technology and business expert in location-based services, data science and intelligent mobility. He was the CEO at G-Consulting (to Waze) and executive manager in ITIS and Trendit. He holds a M.Sc. in Geo-Information Engineering from Technion – Israel Institute of Technology.

Could the connected-vehicle ecosystem solve the problem of congestion in the future?

Is it possible to free people from transport? Actually, transport is an essential part of our communities around the world. Mobi, established in the city of Haifa in Israel, offers solutions to facilitate mobility in order to liberate people from having to be in a rush every morning to avoid being caught in never-ending traffic.

It is possible that a connected-vehicle ecosystem may partly solve the problem of congestion in the future. It is important, however, to note that the road, the infrastructure network, is smarter than the smartest car and even smarter than any advanced car that has yet to be invented.

Freedom of mobility is about the happiness or needs of all the different entities in the city, be it the citizens, businesses or stakeholders, metropolitan governance and so on. As the population increases, the demand for mobility will also continue to rise. Therefore, cities must be prepared to respond to this ever-increasing demand on its mobility infrastructure and provide smooth, reliable transportation and mobility, still an essential part of a productive economic environment.

In order to prevent congestion, a revolution is needed!

There are three mobility models. The first, Centralized, brings back total management power to the city: the city will tell us how to navigate and has total control. The result will be stagnation. The second model, Distributed, focuses on flattening hierarchies and relying on self-organization: geocentric entity, similar to today's personal navigation systems. The ensuing result would be chaos. The last model, Decentralized, is based on a regulator and synchronized entity, synchronizing all participants and providing policy and rules for optimization.

Mobi has succeeded in solving many traffic problems, namely, in Haifa, with a Truck Mobility Optimization plan; in Tel Aviv, with Industrial Area Policy-Making; and in Atlanta, with Event Traffic Control.







Dr. Mike Lee joined FarEasTone in November 2011 as the Executive Vice-President of Enterprise and Carrier Business Division. Before joining FarEasTone, he had an outstanding career and excellent management experiences in the communication and Internet industry. He led Tuntex Telecom in establishing the GSM 1800 network in central and south Taiwan, and then assisted NCIC to obtain a fixed network license in 2000. He operated the largest B2B e-auction site in Taiwan while working as the President of Com2B Corp. He was the President of FETC for more than four years starting in 2007. During his tenure, he acquired over 1.3 million customers.

Dr. Lee holds both a master's degree and a Ph.D. in Electrical Engineering from SUNY, Stony Brook. He also has a bachelor's degree in Electrical Engineering from National Taiwan University.

Turning a cultural capital in Taiwan into a smart city with smart transport

The FarEasTone Group is based in Taipei, Taiwan, and its focus is on facilities for real-time public transport. Unfortunately, our experience has shown that the government does not really know what people want. Their aim is to figure out how telecommunication could improve and innovate transport in an older city



such as Tainan and how to make it a smart city. The evolution of public services is slower than the progress of technology. Public sectors must take advantage of recent technological advancement to improve the quality of life of citizens.

It is interesting to visit Tainan because it shows the important challenges that the city must overcome. This is especially caused by the frequent floods that often occur in this area and hinder its transport services. Tainan also faces many old and new challenges with its two city centres, old town, traffic problems, low land, flood plain, aging population, tourism and fragmented, unfamiliar and untested technical solutions.

FarEasTone entered into a strategic alliance with the government to help transform the ancient capital into a smart city and proposed innovation management based on four visions: cultural capital, low carbon emission, tourist paradise and technology city.

Our first policy alignment was to learn to listen to the citizens. Transportation presented numerous challenges, including winding and narrow roads, parking space and double parking, and motorcycle pollution.

To improve the situation, the city is working on improving public transportation, implementing a central traffic control centre, improving parking utilization and providing better information to the citizens. Their main contribution is an ecosystem application that informs people about the road conditions. There is also a need to encourage people to give up riding their motorcycles and take public transport by making it a more pleasant and less stressful experience with free Wi-Fi, virtual stops, convenient information displays and so on. Taking the bus has to become easier, more available and more efficient. It is one of the many challenges on the road to a smarter city.





Yoriko Kishimoto was the first Asian elected to Palo Alto City Council. Her call to action as mayor was to "Build a Green Economy through Innovation" and she continues to work regionally on transportation, climate change, water and open space initiatives. She is currently a publicly elected official with a leading ecosystem preservation government agency, Midpeninsula Regional Open Space District. Born in Japan, she earned an MBA at Stanford and worked for 20 years as a consultant to technology entrepreneurs. She is the internationally published author of The Third Century: Asia's Resurgence in the Asian Era.



Building a green economy through innovation: combining a walkable community with smart transport

There are certainly many ways to progress toward the vision of a greener economy. Different approaches are possible, but first it is necessary to look at what has been done and take what worked best and integrate it to new plans and policy, and go forward with new and bold ideas. Thus, one must learn to integrate the best of the new with the best of the old.

As an economic, environmental and educational leader, Palo Alto stepped up to break new ground as a knowledge-based community, in both policy-setting and technology. Transportation in California is a special challenge, being the largest source of greenhouse gases with very significant traffic congestion. Autonomous electric vehicles and systems are critical – but so are regional trains and walkable neighbourhoods.

Today, innovation in technology supplies many tools to help reach our goal of a smarter city through smarter transport. There are many challenges and rewards to merging the best community values with global innovation. But governments at all levels tend to be too conservative, afraid to make mistakes. Elected officials must embrace the vision of a greener economy and galvanize the will of the people. People are at the heart of the transition to a smarter city and must have the greatest influence on policy change.

In many cities, there is a need for more cycling and walking; this will lead to healthier people and will minimize the use of transport. Smart transport also means cleaner air through electrification. It is now becoming more and more a global objective that will help make transport smarter and cities smarter through a much greener economy.



PANEL DISCUSSION 1

Implementing a smart city transportation system











MODERATOR



Dr. Beaudet was previously Research Analyst at Science-Metrix (Montréal), Innovation Manager at Imperial College (London), Business Development Manager at Hydrogenics Corp. (Toronto), and Associate Researcher at Mitsubishi Research Institute (Tokyo). He studied economics at Université de Montréal and Hitotsubashi (Tokyo), and completed a Ph.D. in Energy Policy at Imperial College London in 2011. In total, Dr. Beaudet has close to 20 years of experience in the clean energy sector as researcher, consultant and business development manager, with a focus on electric mobility since 2000.

Panellists:

Mr. Robert Franke, Director of Office of Economic Development – Dresden, Germany

Mr. Dov Ganor, CEO and co-founder of Mobi – Haifa, Israel

Mr. Erik Grab,

Vice-President Strategic Anticipation and Innovation Corporate Development, Michelin Group

Honorable Yoriko Kishimoto,

Former Mayor of Palo Alto – Palo Alto, California, USA

Mr. Harri Kulmala,

CEO of DIMECC Ltd. - Tampere, Finland

Dr. Mike Lee,

Executive Vice-President of FarEasTone Group – Taipei, Taiwan

Mr. Gilles Savard,

Executive Director of IVADO - Montréal, Canada

Is there a road map to smart transport?

"You want to become a smart city? Is there a best model or are there as many models as there are cities?"

"We are working today on transportation systems to be ready for a smarter future."

"The solution to smart transport is not only about vehicles; it's much broader than that."

"Cities are the key to transportation in the future."

"We will never stop the development of technologies. What will balance the use of technology are the users."

Do you see a global tendency toward smart transport?

"The United Nations wants to team up with Michelin to accelerate smart transport on a global scale."

"The word 'ecosystem' was initially used for nature, but nowadays it is also used in the transport field in order to represent a 'smarter and sustainable system, an inevitable goal for many cities.'"

"Only the persons who don't cross the borders are willing to make war. People travelling around the world generally want peace. So easier transport could translate into more peace in the world."

"With cities around the world gradually banning combustion engines from their territory, transport will have to become much smarter. This is more than a trend; it is a necessity."

What would the citizens' role be?

"Resistance to change is a normal human behaviour."

"Transport ecosystem: viewing transport as a service."

"Sometimes when you optimize something, it becomes a political problem."

"The ecosystem will be a success if it is undertaken by the motivated ones who want to do something. The others will follow. So, it is not about the best ones that will surely do the best actions."

"What will influence the technology is the user's behaviour and not the technology itself. The development of new technology cannot be stopped. So, more emphasis must come from consumer behaviour."

"One of the toughest things to do is to balance between the market demand and the regulation demand. Being able to do that is what we call 'optimization.'"

"As public transport becomes more efficient, we should see a reduction of private vehicles from city centres."



Longueuil–Montréal Creativity Tour 2017

On Monday afternoon, attendees were invited to visit one of five very different sites, demonstrating Longueuil–Montréal's unique creativity. The region's extraordinary innovation ecosystem is represented by this bouquet of outstanding companies – from mixing art with technology, hydroponic rooftop farming to a world-renowned research facility – each with its very different and particular ways.



The Institut de recherche en électricité du Québec (IREQ) is the largest electricity research centre and the only research centre totally integrated with an electricity company in North America. Hydro-Québec invests in IREQ an annual budget of \$100 million for its innovation projects. Its technology innovation is to improve the performance of the electrical system and prepare a more intelligent and autonomous network.

The IREQ team is made up of approximately 500 people: a broad range of scientists, technicians, engineers and specialists pool their efforts and expertise to support Hydro-Québec in every facet of its operations, from electricity generation to consumption.

The institute's work covers five priority fields: the smart grid; aging of materials and long-term viability of facilities; efficient use of electricity; renewable energy; battery materials; and electric transportation.

Through innovation and technology, Lufa Farms is determined to change the way cities eat. In 2011, they built the world's first commercial rooftop greenhouse.

Their concept is to grow food where people live and to grow it more sustainably. This means growing on no new land; capturing rainwater; recirculating 100% of the irrigation water and nutrients; reducing energy use; composting green waste; using biological controls instead of synthetic pesticides, herbicides and fungicides; and delivering produce to customers on the same day it is harvested. This also means developing the expertise and technology to make this type of agriculture efficient, data-driven and scalable. In doing so, they are demonstrating that large urban and peri-urban rooftop farms are a commercially viable way to feed cities.

Their vision is to support and promote local food systems. This means Lufa Farms sources from partner farms and food makers who share their values of providing fresh, local, responsible and artisanal products to urban populations. Their urban greenhouses, local partnerships, e-commerce platform and fulfillment methodology together constitute an integrative solution for sustainably feeding cities worldwide.







Cirque du Soleil is an entertainment company considered the largest theatrical producer in the world. This new-day circus was founded on July 7, 1984 and its world headquarters is based in Montréal. Between 1990 and 2000, the circus expanded rapidly with travelling and permanent shows all over the world, creating more than 4,000 jobs in over 40 countries with annual revenues of US\$ 800 million.

The company's creations have received numerous prizes and distinctions, including a Bambi Award in 1997; a Rose d'Or in 1989; three Drama Desk Awards in 1991, 1998 and 2013; three Gemini Awards; four Primetime Emmy Awards; and a star on the Hollywood Walk of Fame. In 2000, Cirque du Soleil was awarded the National Arts Centre Award, a companion award of the Governor General's Performing Arts Awards. In 2002, Cirque du Soleil was inducted into Canada's Walk of Fame.

Established in 1993, the Centre technologique en aérospatiale (CTA) is a technological transfer centre dedicated to the application of aerospace technologies. CTA is linked to the École nationale d'aérotechnique (ÉNA). Its mission is to supply its customers and partners quality services in innovation support and development to help them increase their knowledge, productivity, competitiveness and the quality of their products and services. Its fields of expertise are design, analysis and manufacturing of parts (metallic or composite materials), non-destructive testing, robotics, avionics and air operations.

The CTA's mandates are for applied research, technical support and technological demonstration in the field of aerospace.





Founded in 2001, this multimedia studio offers a full range of production expertise under one roof. Its team combines specializations in video, lighting, architecture, sound and special effects to create remarkable experiences. With headquarters in Montréal, it went from 15 to 250 employees and has offices in Los Angeles, Tokyo, London, New York City and Paris. The studio has created more than 400 unique shows and destinations. Moment Factory pushed the boundaries of excellence in multimedia and emerging art forms to create some of the most imaginative public experiences the world has ever seen.

Moment Factory explores innovative storytelling, creating uniquely compelling multimedia worlds that turn passing moments into once-in-a-lifetime experiences. Inspired by the meaning and identity of the site, they create permanent and versatile multimedia infrastructures tailored to their clients' needs.

Moment Factory brings people together.
Their shows and destinations pioneer forms of entertainment that offer the world new experiences. Whether at a concert, a flagship store or across an urban square, they aim to inspire a sense of collective wonder and connection.

SESSION 2

Innovation and Smart Energy





A world-renowned researcher in complex materials and biophysics with more than 160 scientific papers, Dr. Mousseau has published numerous books for the general public. In 2013, he co-chaired Québec's Commission on Energy Issues, whose report, Mastering Our Energy Future, was released in February 2014. As member of Sustainable Canada Dialogues, he was one of the lead authors for the report Re-Energizing Canada: Pathways to a Low-Carbon Future, commissioned by Natural Resources Canada in 2017. Since September 2011, Dr. Mousseau has produced and hosted the popular science radio show La Grande Équation at Radio VM. His most recent book, Gagner la bataille du climat, was published in 2017 by Éditions du Boréal.

Pathways to a low-carbon future: the need to support innovation that goes beyond energy sources

The transition to a low-carbon economy offers remarkable leverage for innovation as it imposes a major change in our relation to energy, requiring considerable public and private investments. Accelerating the low-carbon energy transition in the following years represents one of the major objectives of the Longueuil–Montréal innovation ecosystem.

Since the bulk of our energy is from 100% renewable electricity, already used for heating most buildings, transportation becomes the major source of greenhouse gases. Therefore, the implementation of new mobility strategies has become a major factor in the development of a greener economy. Hence, our electricity rates are among the lowest in North America, while gasoline rates are among the highest. This can only fuel government plans, at all levels, to promote electrification and intelligent transport.

More than half of our public transport is already electric, thanks mainly to our all-electric subway. Electric buses are also gradually replacing our fleet of 1,600 buses presently in operation. Plus in 2020, we will see the completion of a new integrated all-electric fast train, adding a 67-kilometer network. Other measures in our regional





transport cocktail include 788 kilometers of cycling paths, self-service bicycles and other vehicles, hundreds of vehicle charging stations and even an incentive of up to \$8,000 on the purchase of an electric car.

Besides electrification and smart transport, in 2014, the province of Québec joined California and other states to create a regional carbon market, already decarbonizing our energy supply. Regional carbon markets keep looking like the best option to cut emissions, boost renewables and protect consumers from the costs of transitioning to a clean energy economy.

This energy transition has become a golden opportunity for our ecosystem, boasting one of the strongest operational research, information technology and artificial intelligence communities in the world.



Sylvia Michel has extensive experience in the field of energy and sustainability. In 2012, she joined Kraftringen as President and Chief Executive Officer. The Swedish energy company has since then been transformed with a clear focus on striving to achieve long-term sustainability. This means an entire municipality and region's production and usage of energy can be managed into a smart consumption and sustainable business solution. Its transformation has become a point of reference, and, in 2014, Sylvia Michel was awarded "Influencer of the Year" in the energy category. In 2016, Kraftringen was awarded with the CEEP CSR Label.



Research heats the city!

Urbanization has increased greatly over the past decade and will certainly continue to increase in the upcoming years. Most of the world's population (54%) lives in urban zones. With this fact come other realities that may affect all populations. Among these realities, we can include the huge quantity of natural resources that are consumed by cities. This amount reaches 78%, which is a very considerable volume. That leads us to ask an important question: how much longer will natural resources last? Unfortunately, it does not stop at the consumption of natural resources. Indeed, most of the greenhouse gases come from cities (80%).

The solution to all this is to plan a low-carbon future, and to do so, it is necessary to follow a sustainable model in our cities. LUND NE/BRUNNSHÖG, a new sustainable district is a good example. It is considered as a role model in Europe, a regional destination for research, culture and recreation, and the world's best research and innovation environment.

In Sweden, and in Europe in general, a considerable amount of energy is used for heating. The ideal case would be to exploit local resources and to recover the residual heat, which is often a lost portion of energy. The infrastructure of the ESS research complex (located in Lund) is a good example, where a combination power and heat plant is used. A considerable amount of residual heat is therefore recovered. This complex also includes other facilities such as laboratories and sport centres. It is a world-class research facility and its expertise is the design of the energy system/energy efficiency. This research facility is responsible, renewable, recyclable and reliable, and it has an agreement on excess heat.

We hope to see a sustainable and exciting urban development, where it is easy to choose a sustainable lifestyle with a high quality of life.





Professor Thumrongrut Mungcharoen received his Ph.D. in Chemical Engineering from the University of Texas at Austin, USA. For more than 25 years, he was involved as an expert in several projects on energy and environment, cleaner production, life cycle assessment and eco-design. He is currently on the advisory committee of the Federation of Thai Industries. He is also a Vice-President of the Asia Pacific Roundtable for Sustainable Consumption and Production Board of Trustees. He has initiated several projects on sustainability assessment of bioenergy and agri-food products with the involvement of key partners from both public and private sectors. He has published more than 220 scientific papers.

Bioenergy promotion: energy security and sustainability issues

In Thailand, there are several major energy concerns. The importation of energy constitutes a significant share of GDP (9%–13%). Thailand depends too much on fossil fuel (>90%) and the transportation sector is the major energy user (>30%). Therefore, the country has put forward an ethanol and biodiesel policy.

Our ethanol is mainly derived from sugarcane molasses and cassava. It has both a demand and supply side. The demand side corresponds to the price incentive and the vehicle tax based on CO2 emissions. The supply side promotes sustainability through increased yield and production efficiency.

Palm oil is the main product used to produce our biodiesel. Just like the ethanol policy, the biodiesel policy has a demand and supply side. The demand side regulates and increases the percentage blend, and the vehicle tax is also based on CO2 emissions. The supply side promotes sustainable feedstock and increases yield/production efficiency for advanced biofuel.



The National Science and Technology Development Agency (NSTDA) is Thailand's national agency for science and technology. It is a major player in the Thailand Science Park Ecosystem and the Thailand Innovation System, a leading innovation ecosystem in Thailand with more than 90 members from both public and private sectors. NSTDA has two major universities on the same compound.

NSTDA's objectives are to develop alternative energy production with suitable technology (economy), to fully utilize the country's alternative energy potentials (energy security) and to increase social and community benefits from alternative energy production and usage (ecology).

There are a number of technical, institutional and socioeconomic challenges to overcome to realize opportunities on a wider scale, which is critical to ensuring the positive impacts at each point along the various supply chains. To ensure sustainable biofuels, a sustainability assessment is needed, and this requires selecting the proper methodology, establishing public/private/people partnerships (4Ps), collecting data and studying results.

The Thailand Science Park links public and private sectors through research and development. An innovative bioenergy value chain has been established within the Park ecosystem. It involves plantation, production of main products and production of biofuel that is used for aviation. These activities have brought about noticeable sustainability improvements.



Dr. Nouredine Hadjsaid received a Ph.D. and the Habilitation à Diriger des Recherches degrees from Grenoble Institute of Technology, in 1992 and 1998 respectively. He is presently a full professor at Grenoble INP/ENSE3, where he conducts research at G2ELAB. He is also an invited professor at Virginia Polytechnic Institute and State University (Virginia Tech - VA, USA). Dr. Hadisaid is also the Deputy Director of G2ELAB, the Director of an ENEDIS chair of excellence on smartgrids and the Chairman of Scientific Council of Think Smartgrids France. He is presently the vice-chair of **IEEE Intelligent Grid and Emerging Technologies Coordination Committee and the French** representative at International Energy Agency for ISGAN-SIRFN Annex. Dr. Hadisaid has published more 250 scientific papers and has authored/coauthored and directed seven books about power and smartgrids.



Energy transition through smarter grids: from heritage to innovation

The energy transition opens up new challenges for research on energy, particularly in the electrical field. Key factors such as energy decarbonation, digital energy, energy efficiency targets and new uses such as electric vehicles place not only the electrical vector at the centre of the energy transition but also highlight the need for multidisciplinary research. It is well known that innovation is often generated from research at the crossroads between disciplines.

Our world is becoming more electric. Almost everything we interact with today is either already electric or becoming electric, and a lot of energy is needed to power this. In this context, the power grid is a vital infrastructure. It has played a key role in the electrification of modern society and is expected to play an even more central role for integrating renewable energy sources, electrical vehicles, enabling active participation of end users and achieving energy efficiency while keeping the grid fundamentals with respect to economy, security and quality of supply. As such, this transition requires an even smarter grid capable of achieving the assigned goals without overinvesting on existing assets.

The GreenLys project, for example, is an urban smart grid full-scale demonstrator project with Grenoble and Lyon. It was implemented to test the operation of a smart grid involving various value chain stakeholders. The goal was to contribute to the standardization of a functional smart grid and the integration of renewable energy sources, integration of electric vehicles, aggregation platform, energy management for end users, ICT functions, smart control solutions and cost-benefit analysis.

We are halfway through the project now, and we are dealing with more concrete aspects, ensuring collaborations across our borders and targeting rapid results. We are also learning certain lessons, namely that the success of such a project depends largely on mobilization of the ecosystem, a strong background for collaborative projects, on confidence gained among involved stakeholders and good governance.





PANEL DISCUSSION 2

How to select the most innovative smart energy program





MODERATOR



Isabelle Picard is a chemical engineer with more than 15 years of experience in research and development projects. Her experience includes product development (HVAC technologies, waste treatment technologies and fuel cells), project management and technology transfer. She is the Director of the Natural Gas Technologies Centre.

Panellists

Mr. Pierre L. Gautier, CEO of NAPEC Inc. – Montréal, Canada

Dr. Nouredine Hadjsaid, President of the French scientific council of Think Smartgrids, INP – Grenoble, France

Ms. Sylvia Michel, CEO of Kraftringen Energi AB – Lund, Sweden

Mr. Normand Mousseau,

Professor of physics at Université de Montréal and Academic Director of the Trottier Energy Institute at Polytechnique Montréal – Montréal, Canada

Professor Thumrongrut Mungcharoen, Chairman of Energy and Environment Cluster, NSTDA – Bankgkok, Thailand

Dr. Shigeru Niki, Assistant Director General, Department of Energy and Environment, AIST – Tsukuba, Japan

How important is technology on the road to a smart program?

"It is important to take into consideration the following factors: price, insulation, transformation value and smart energy technology. However, we need to use what we have and what we have now is hydroelectricity."

"It is crucial to understand that technology is one thing but it is not a solution for everything: there is also human awareness and behaviours."

Is there a best smart energy program we can implement within a regional ecosystem?

"Most of the time, a lot of small gestures can eventually bring big results and it is often obvious. But to build the best smart energy program, we need data. One of the main problems that make it difficult to move toward a better energy program is the lack of data related to energy."

"You cannot learn from what is happening now, you need to try something new and this is called innovation. It is important to be aware that when you try something new you probably are going to fail before succeeding, and that is normal. If you never fail, you are not innovative enough!"

"In universities, it is probably possible to fail sometimes. But in business, it's catastrophic. You do not have the same chances."

Are there any other key elements we need to consider for implementation (other than people)?

"It depends on the availability of technology, ability to collaborate, courage of leadership and undertaking real actions."

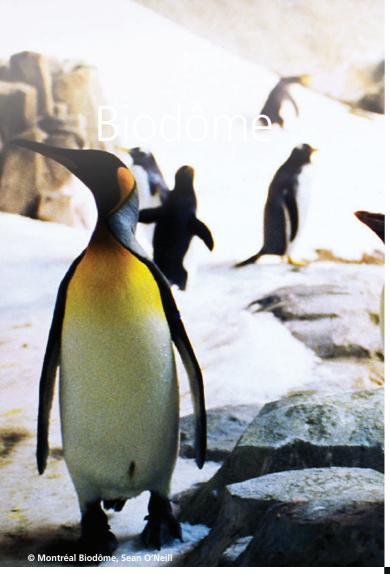
"There must be more diversity, people coming from different sectors (sociologists, etc.), not only engineers. Besides, there must be more women in the environmental sector and in engineering jobs as well. It probably requires a greater effort to publicize the engineering jobs and to succeed in attracting women."



Discovering Espace pour la vie

On Sunday afternoon, the Longueuil–Montréal Innovation Ecosystem conveyed HLF attendees to a different sightseeing experience at Espace pour la vie. This space for life environment brings together the Biodôme, Insectarium, Botanical Garden and Planetarium, but it is so much more. It is a participatory movement and a commitment to biodiversity. It is a vast project based on citizen participation and co-creation with visitors. Just as nature belongs to everyone, it is everyone's movement. It's a way of experiencing nature. It is a space we visit where we can exchange, collaborate and learn.

Espace pour la vie leads people to better experience nature through its communication, conservation, education and research. Its mission is to promote our planet's biodiversity and encourage people to better protect it. All the institutions within Espace pour la vie have adopted a sustainable development charter.



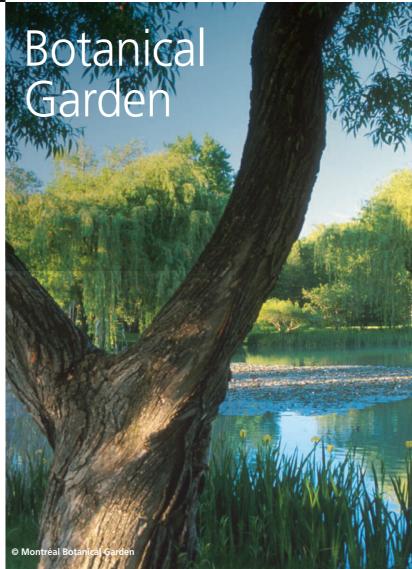
Biodôme means "house of life" and recreates some of the most beautiful ecosystems in North America in an indoor area. Among its ecosystems, there are the Tropical Rainforest, the Laurentian Maple Forest, the Gulf of St. Lawrence and the subpolar regions of Labrador Coast and Subantarctic Islands. By recreating these ecosystems, the Biodôme promotes an individual and collective awareness of the necessity to protect our natural heritage.

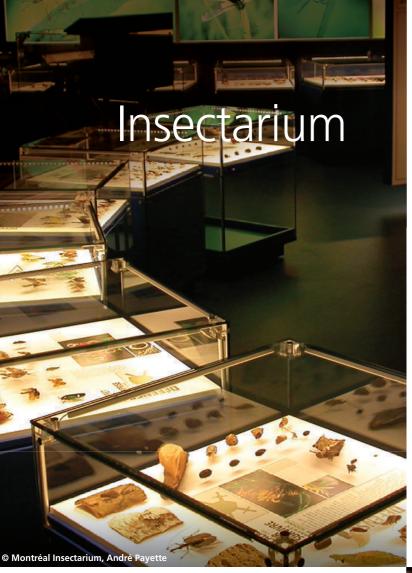
The Biodôme provides visitors with different tools and environments to explore and learn about the different ecosystems. It is committed to the well-being of the living plants and animals it houses. Also, the ecosystems present in the Biodôme are ideal for scientific studies.

Through gestures of education, conservation, research and outreach, the Biodôme wishes to provide an important message: we are all part of nature and we can help protect it.

The Botanical Garden of Montréal is a magnificent place to enjoy natural beauty. The Garden was founded in 1931 by Brother Marie-Victorin and is now known as one of the world's greatest botanical gardens. All year long, it offers a colourful program of events, exhibitions and activities. The Garden has a collection of 22,000 plant species and cultivars, 10 exhibition greenhouses, the Frédéric Back Tree Pavilion and more than 20 thematic gardens spread out over 75 hectares. It is a true living museum of plants from the four corners of the globe and encourages people to better experience nature.

Its mission is to conserve, develop and present to the public living plant collections and to pursue cultural, educational, social and scientific research in botany and horticulture.





The Insectarium of Montréal houses more than 250,000 specimens of living and naturalized insects, an anthill and other vivariums that are valuable tools for educational and research activities. It works to safeguard the world's entomological heritage and is considered one of the largest insect museums in North America. In 2010, it celebrated its 20th anniversary.

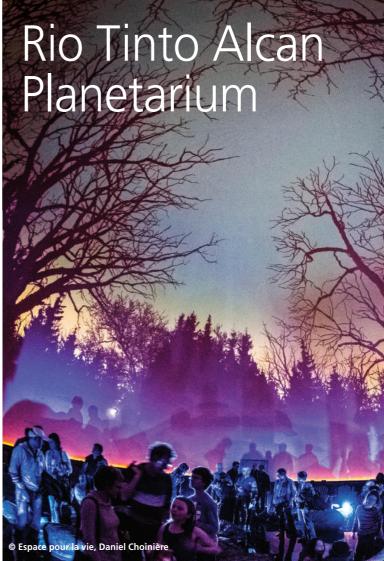
The Insectarium contributed to major projects around the world, such as the creation of the first insectarium in Shanghai (China), the creation of a butterfly house in the Adirondack Park (USA), the creation of other planned and completed insectariums around the world (Hong Kong, China; Taipei, Taiwan; Newfoundland), butterfly houses at the Children's Museum in Minnesota and the New York Botanical Garden (USA).

The Insectarium encourages people to think more positively about insects and better understand their role in nature and their importance to the planet's ecological balance.

Montréal's Rio Tinto Alcan Planetarium has been sharing its passion for the sky and stars with visitors, young and old, for more than 45 years. The building resembles Saturn surrounded by its rings, hence the originality of the place.

In 2013, a renewal of the Planetarium was undertaken to incorporate the latest technological innovations to modernize its facilities and equipment. It required more than three years of planning and hard work.

The Planetarium now offers a new experience of astronomy and uses different technologies to create a unique experience of the universe through two complementary shows, one poetic and the other scientific. A true precursor in the field, the Planetarium redefines the essence of planetariums through its original and innovative approach to astronomy.



SESSION 3

Innovation and Smart Society





GUEST SPEAKER



In just a little over five years, Fred Walti has forged LACI into a regional commercialization ecosystem with an international footprint. Under Fred Walti's leadership, LACI has helped 67 companies raise \$123 million in funding, created 1,300 jobs and delivered more that \$293 million in long-term economic value for the City of Los Angeles. Fred Walti was named on the Techweek100 as one of the most impactful technology leaders in 2014. Fred Walti has been involved — either as a founder, consultant, principal or investor — in the start-up of several dozen technology companies. He also started one of the first interactive divisions of a global advertising agency in 1995. Fred Walti received a B.A. from New York University.

How do innovation ecosystems enable smart society living?

Innovation makes a smart society better from four perspectives: economic development, quality of life, urban experience and solving the world's toughest problems.



Economic development

Introducing sustainable technologies will generate huge business in the energy, transportation, waste, water and food sectors. The City of Los Angeles is driving sustainable technologies through every city department. Los Angeles was one of the first cities to establish a Chief Sustainability Officer, who made a Sustainability Plan to help the port, airport, parks, sanitation and department of water and power use sustainable technologies. The City is also fostering innovation through the Los Angeles Cleantech Incubator (LACI) and associated ecosystems.

Quality of life

Innovation provides a cleaner environment with a 70% reduction in smog since 1985. It also allows us to use fewer resources, provide fresher food and revolutionize driving in Los Angeles with Uber and Waze.

Urban experience

Downtown Los Angeles went from a ghost town just a decade ago to one of the most vibrant city centres in the country because innovation centres are now built in the heart of urban life. Among the results of innovation, creative people tend to concentrate in downtown and urban sectors, and less so in suburban areas.

Note also that cars are parked 90% of the time and people, and millennials in particular, don't aspire to owning a car but aspire to access affordable transportation. If we combine these two factors, we know that the electric autonomous vehicle will lead the future. That way, our vehicles will be used more and will reduce the demand for parking space.

Solving the world's toughest problems

There are many poor countries that are affected by environmental issues. Therefore, sustainable development must be undertaken on a global level. It is important to know that global innovation ecosystems are necessary to solve climate change.



PANEL DISCUSSION 3

The impact of a smart society environment on an innovation ecosystem





MODERATOR



Paul Lewis is Full Professor of Urban Planning and Dean of the Faculty of Environmental Design (which brings together four main disciplines: architecture, landscape architecture, design and urban planning) at Université de Montréal. Previously, he worked as an urban planner for the cities of Hull and Gatineau and as a researcher for the Council of Universities and the Department of Municipal Affairs. His research focuses on retail, real estate and urban development and transportation (planning and active and collective transportation in particular). He is regularly invited by the media to discuss transport and urban planning.

Panellists

Mr. David Bridges,

AVP, Enterprise Innovation Institute International, GIT – Atlanta, Georgia, USA

Prof. Dr. Gilbert Declerck,

former CEO of IMEC, Chairman Leuven MindGate – Leuven, Belgium

Dr. Alan Mathewson,

Head Micro Nano Systems Centre, Tyndall National Institute – Cork, Ireland

Ambassador Jean Daniel Tordjman, Senior International Advisor, CEA Tech – Grenoble. France

Mr. Fred Walti,

CEO of Los Angeles Cleantech Incubator (LACI) – Los Angeles, California, USA

Is innovation essential to a smart society?

"Innovation should always be developed to improve quality of life or other benefits, like employment. Otherwise, there is no contribution to make it smart."

"By definition a smart society is an innovative society. It is always making sure that innovation and technology positively affect the citizens and their environment. That is the only possible impact."

"A smart society is not built solely by engineers and by technology; it must include sociologists, health professionals, city planners, architects and more. We have to push further the interdisciplinary frontiers where lies the innovation."

"An innovation ecosystem will tend to try to recreate something new in a new environment instead of trying to innovate in existing structures."

"If a smart city environment does not include a dynamic innovation ecosystem, how smart could it be?"

PANEL DISCUSSION 4

What are the innovation road maps of ecosystems with regard to smart society projects?





MODERATOR



Panellists

Prof. Dr. Gabriel M. Crean,

Advisor to the Deputy Prime Minister and Minister of the Economy of Grand-Duchy of Luxembourg

Prof. Michael Fancher,

Associate Professor of Nanoeconomics, Director of the NYS Center for Advanced Technology in Nanomaterials and Nanoelectronics (CATN2) at SUNY Polytechnic Institute – Albany, New York, USA

Dr. Robert Franke,

Director of Office of Economic Development – Dresden, Germany

Ms. Ikram Makni,

CEO of the Sfax Business Center and General Director of the Chamber of Commerce and Industry of the Region – Sfax, Tunisia

Dr. Greg Morin,

Director for Strategy and Innovation, Argonne National Laboratory – Chicago, Illinois, USA

Is it possible to find a road map for smart society projects?

"To create a smart society, a lot of people must get involved, governments too."

"No success is possible without making citizens participate in the road map. The difficult part is to ensure that there are direct stakeholders' benefits, employment, progress in knowledge, with value creation."

"Smart society means so many things to so many people. Imagine now talking about innovation ecosystems?"

"Is a common road map possible? There are not necessarily the same challenges from one city to the other. We have to focus on a few actions and build on the success. That is what motivates and ensures that we can keep going forward."

"Usually, when you think of smart society, you think of technology to enhance lifestyle, but it is far more global."

"Road maps have to generate progress. We are constantly improving the way we serve and communicate with our population, not only through better technology."

"It does help to apply innovation in order to better focus on our services to our clients or citizens. That is how we integrate innovation. It has to be better and easier with direct tangible benefits."

High Level Forum Gala Dinner 2017





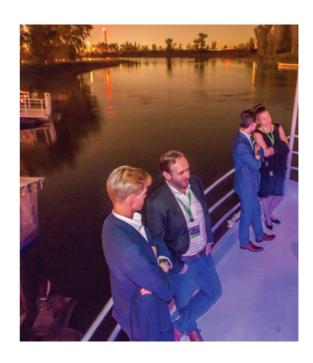
An enchanted evening

A very special gala evening was held on Monday night and featured a surprise cruise on the St. Lawrence River. Guests boarded the boat at a pier in Old Montréal and enjoyed a majestic cruise, in perfect weather, with beautiful views of Longueuil and Montréal, located on each side of the river.

It was certainly a wonderful opportunity for participants to meet and discuss in a relaxed atmosphere, and appreciate the sunset and the views. The boat arrived to an undeveloped private island where tents had been set-up and cocktails and dinner awaited. After a short visit of the premises, guests were invited to dine under the tent as the sun went down. There were joyfull and animated discussions everywhere.

On the way back, the illuminated cities and bridge offered a spectacular view. As the boat was approaching the Jacques-Cartier bridge, a representative of Moment Factory, the firm which produced the illumination of the bridge for Montréal's 375th birthday, explained the various lighting scenarios and constant animation. He explained that various colors expressed the mood of the City and that part of the numerous lighting scenarios can be influenced by citizens communicating directly with the bridge through Twitter.

As a full moon came about for a last farewell, the boat slowly approached the dock in Old Montréal, marking the end of this memorable and pleasant cruise. Some took the awaiting buses while others chose to extend the pleasure with a nice stroll through Old Montréal and up the hill to the hotel. Truly an enchanted evening.



Conclusion to HLF 2017



Jean-Daniel Tordjman is Senior International Advisor of CEA-Tech, President - Le Club des Ambassadeurs, President - Le Cercle des Nouveaux Mondes, Vice Chairman of the Board, Embassair and Honorary Ambassador of the Republic of Korea for international investment

HLF in a changing world

The world is changing in all its dimensions. We were given impressive examples of innovations such as autonomous big ship, virtual bus stops and reflections on being connected but blocked in a traffic jam. Issues are global and complex, not simply scientific or technological, but also societal and political.

The digital revolution is here and we can all see its growing impact on science, business, healthcare, finance and society. It affects our ideas, relationships, education, economies, institutions, the way we behave, even the entire functioning of our societies. It has become the main driver for growth and should reach 25% of the global economy by 2020. The competition is on digital skills, technologies and accelerators.

Seven of the ten most important market capitalisations are Apple, Google, Microsoft, Facebook, Amazon, Tencent and Alibaba. The digital economy is embedded in our old civilisation and our ecosystems are all part of our civilisation. Sfax is berber, roman, phenician and cartagenese, Lund and Leuven have some of the oldest universities, Taiwan, Japan, Israel and Europe are among the oldest civilisations and Canada has a rich Amerindian, French and British heritage.

Mandatory transformations

Our ecosystems will be at the forefront of these mandatory transformations. The impact will be mostly positive but there will be many challenges. Job creation is certainly on top of the list. The increase in productivity and the transformation of many industries and services will transform the job market. We will have to focus on flexibility and permanent education and training, and deal with cybercriminality and fiscal evasion.

For this, we need the support of major HiTech corporations and the disruptive ideas coming from startups. Humans are at the core of smart systems. Therefore, we need to remove inhibitors to growth and facilitate the cross-fertilization between sectors.

The High Level Forum is the forum of the industries of the future. Our strength is in our differences. We need to bring more industry leaders to HLF, invite colleagues to our events, participate in common projects, compare our performance indicators and our innovation programs, and focus on user experience driven innovation. Our future is in our hands.

We had a marvellous stay in Montréal!

Many thanks!

We will come back!

Invitation to the High Level Forum 2018

On behalf of the Grenoble GIANT (Grenoble Innovation for Advanced New Technologies) Innovation Campus, which organizes and manages the High Level Forum initiative, Jean-Charles Guibert, Chairman of MINATEC at CEA Tech, and Patrick Levy, President of the Communauté Université Grenoble Alpes, invited the audience to attend the 7th edition of the High Level Forum, which will take place in Grenoble (France) on November 11–14, 2018, with the theme "Innovation for Tomorrow's Infrastructures."

This 7th edition will see a scaling-up of the forum with several new features, including:

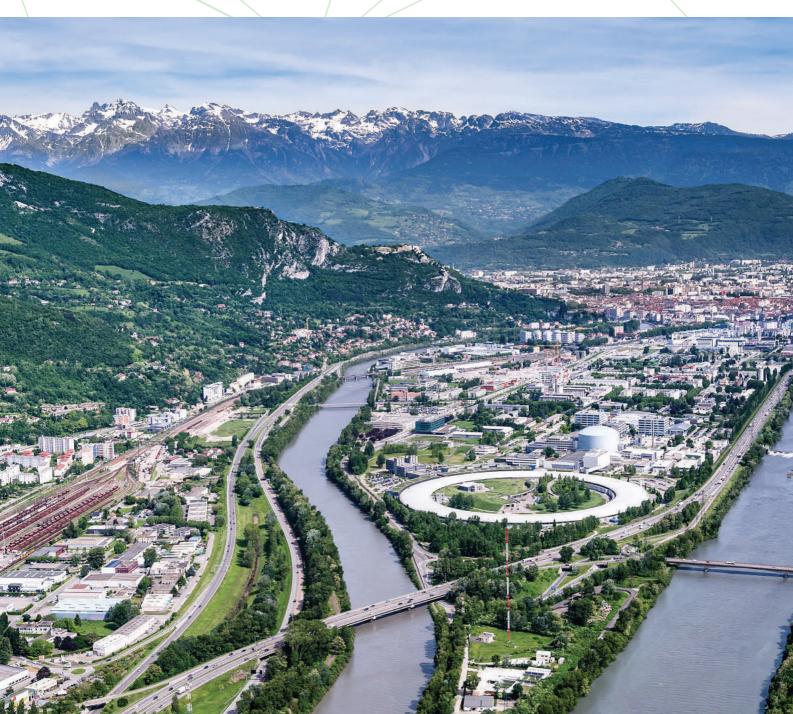
- A fourth day devoted to meetings between ecosystem delegations and with local innovation players from the Grenoble ecosystem
- A conference dinner with a guest star
- A workshop with contributions from all attendees
- A Grand Prix HLF Award
- Increased participation of ecosystems and speakers
- International media coverage



The edition will take place in Grenoble, a city of innovation in France, ranked by Forbes Magazine in 2014 as the world's fifth most inventive city, which manages in a very balanced and efficient way the triple helix of innovation: education, research and industry, with the strong support of local and regional public authorities.

The GRENOBLE INNOVATION ECOSYSTEM "GIANT" invites you to the 7th HIGH LEVEL FORUM in 2018 See you in Grenoble, France! November 11–14, 2018

GRENOBLE, Capital of the Alps, Capital of Innovation





Grenoble is a city with one-half million inhabitants, located in southeast France, in the foothills of the Alps, where nature, well-being and innovation come together. Grenoble's industrial roots and early innovations were the result of its geographic location and the rush of water down from the mountains. Water provided the literal force for the development of the region's metallurgical industries in the 17th and 18th centuries and, through an early example that mixed education, research and industry, the region became a pioneer in hydraulic technology with the development of hydroelectricity in the 19th century, which in France was called "houille blanche," or "white coal."

With advances in technology, Grenoble's innovators moved to develop electrical technologies more broadly, including harnessing electrical power for trains, trams and cable cars in the 1920s and 1930s. In the 1960s, Grenoble was one of Europe's pioneers in the emerging field of microelectronics, later harnessing these capabilities to develop micro- and nanotechnologies in the form of sensors, imaging systems and new energy sources. Today, it leverages these technologies within emerging digital ecosystems.

Ranked by Forbes Magazine in 2014 as the world's fifth most inventive city, Grenoble is the destination in France most preferred by students (1 in 5 residents is a student) and is the location of CEA (Commissariat à l'énergie atomique et aux énergies alternatives), which is ranked as the

world's second most innovative public research institution, the first in Europe. Grenoble also hosts several internationally leading companies in energy (Schneider), in microelectronics (STMicroelectronics), in medicine (Biomérieux), in machinery (Caterpillar) and in many other sectors. It is also home to a dense cluster of innovative start-ups that have helped to make France the first foreign country to exhibit at the CES Innovation Show in Las Vegas.

Over the past 10 years, Grenoble has developed its GIANT (Grenoble Innovation for Advanced New Technologies) Innovation Campus, which was founded by eight local research and educational institutions and supported by the whole regional ecosystem, its industry and its public authorities. On its 250 hectare campus, located in the new heart of Grenoble, GIANT is host to more than 10,000 students, 10,000 researchers, 5,000 industrial jobs and 40 companies, and generates more than 700 patents and 7,000 scientific publications per year. With more than 9,000 foreign visitors per year, GIANT is the "international networking station" of the city of Grenoble.

Grenoble, with its DNA marked by innovation and its international mindset, was a natural place to initiate the High Level Forum in 2012, with the vision of creating an international community of regional ecosystems, driven by innovation and collaboration, and the dream to transform it into the "World Innovation Ecosystem Forum"!









