



40<sup>th</sup> **IABSE** Symposium

**NANTES 2018**

September 19-21, 2018 Nantes, France



*Cheviré Bridge © Médiathèque Nantes-Saint-Nazaire*

# Tomorrow's Megastructures

*Preliminary Invitation + Call for Papers*

**Organized by:**

**The French Group of IABSE**

in cooperation with

**The French Association of Civil Engineering**





## Introduction

Nantes, France, will host the **40th IABSE Symposium** with the main theme of **“Tomorrow’s Megastructures”**. Popularized in the 1960s as an architectural concept, a megastructure is referring to a very large manmade object, though the limits of precisely how large this is, may vary considerably. The term could be applied to any especially large or tall building, but also to enormous self-supporting artificial constructions.

Megastructures represent the most ambitious and spectacular constructions in the world which are all incredible technological achievements of great human adventures. As the Jules Verne’s birthplace (who wrote many adventure novels, including a premonitory “Paris in the Twentieth Century”), Nantes is definitively the best place to address the following challenges:

- Megastructures: a radical paradigm shift or simply a change of scale?
- Today’s and tomorrow’s megastructures and megaprojects
- New trends for innovations in the construction, the preservation, the exploitation and the upgrading of structures.

The organizers invite the world’s structural engineering community to share their experiences with today megastructures and to present their vision of tomorrow megastructures and more broadly their prospect of future outstanding structures. Consultants, contractors, owners, researchers and practitioners will have the opportunity to exchange ideas and experiences on structural design, construction and maintenance issues.



*Nantes Island © Médiathèque Nantes-Saint-Nazaire*





## Dates and Venue

**Date:** September 19-21, 2018

**Venue:** La Cité de Nantes Events Center  
5 rue de Valmy  
44041 Nantes  
France

The Annual Meetings will take place prior to the Symposium from Monday September 17 to Tuesday September 18, 2018, at the same venue, which is located in the city center, close to the railway station. An Icebreaker Reception will be held in the evening of Tuesday, September 18, 2018.

## Symposium Format

The scientific program will include **Plenary and Concurrent Sessions** over three full days. **Panel discussions and Poster sessions** will also be incorporated into the program.

Papers dealing with different themes and topics of the Symposium will be selected from abstracts submitted to the Scientific Committee. These papers will be presented orally or by poster.

At the Plenary Sessions, **invited keynote speakers** will present lectures on key symposium topics. Sub-Plenary sessions will be devoted to specialized topics. Concurrent Sessions will be organized by topics according to the selection of the Scientific Committee.

**Panel Discussions** will highlight themes of widespread interest as identified by IABSE's Working Commissions and Working Groups, in agreement with the Scientific Committee and the Organizing Committee. **Posters** will be presented by their authors in facilitated sessions to enable contact with the paper authors during the Poster Sessions.

The official language of the Symposium is English.

## Participants

The Symposium is intended for civil and structural engineers, architects and associated professionals interested in the megastructures.

Participants will include designers, consultants, researchers, owners, contractors, operators, suppliers and representatives of authorities and others interested in the Symposium themes and topics.



*The elephant of the Galerie des Machines*  
© Gérard Grillaud



*Saint-Félix canal and Nantes Events Center*  
© Médiathèque Nantes-Saint-Nazaire



## Scientific Committee

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Michel Royer-Muller  
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Olivier Stephan  
Christian Tessier



*Anne de Bretagne Castle*





## Themes and Topics

### 1- MEGASTRUCTURES: A RADICAL PARADIGM SHIFT OR SIMPLY A CHANGE OF SCALE?

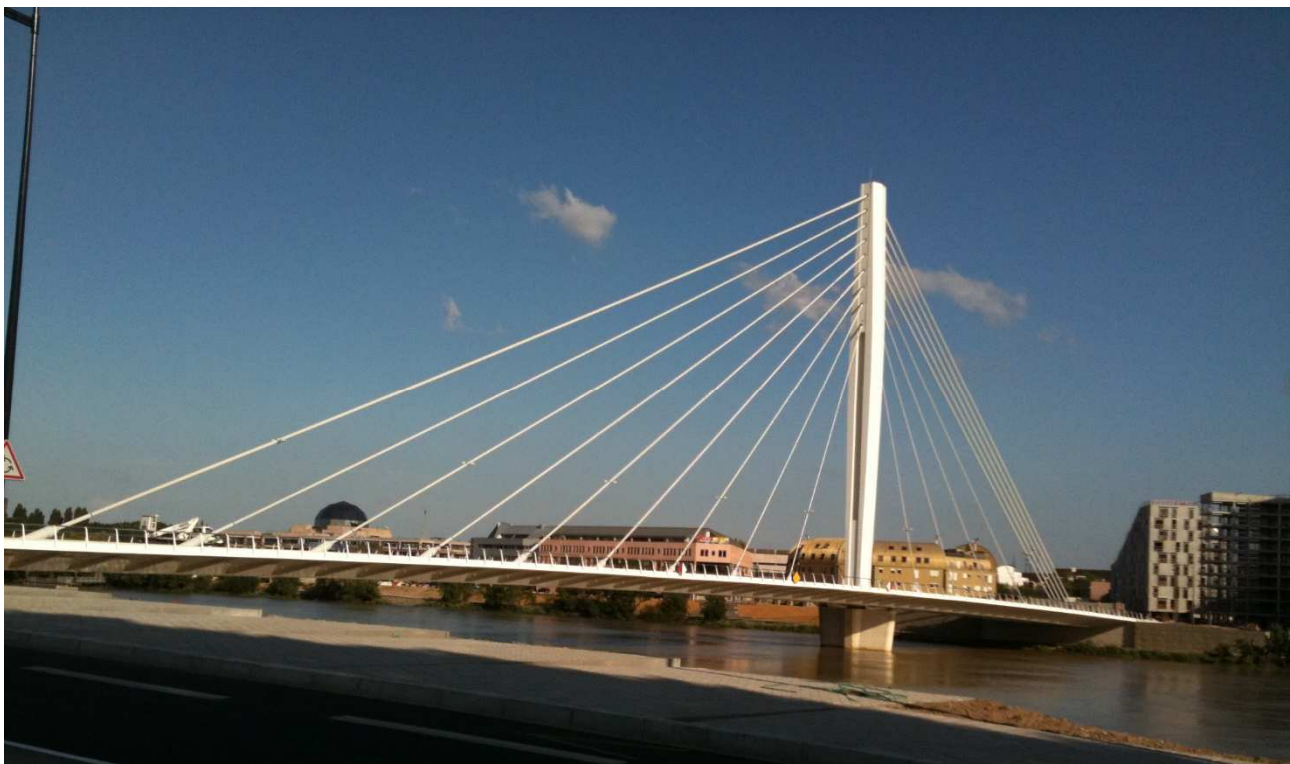
- Arcology
- Macro-engineering
- Autonomous buildings
- Bionic architecture
- Earthship
- Underground projects
- Climate change adaptation and disaster resilience

### 2- TODAY'S AND TOMORROW'S MEGASTRUCTURES AND MEGAPROJECTS

- Megaprojects and risk
- Megaprojects as economic stimulus program
- Sea-crossing bridges and tunnels
- High-speed railway structures
- Tall buildings and structures
- Large-scale sporting events
- Floating structures
- Power plants megaprojects
- Historical megastructures

### 3- NEW TRENDS FOR INNOVATIONS IN THE CONSTRUCTION, THE PRESERVATION, THE EXPLOITATION AND THE UPGRADING OF STRUCTURES

- High and very high-performance materials
- Smart materials and structures
- New methods of design
- Performance Based Design
- Reliability and risk
- Long design lifetime
- Design for durability
- Design for robustness and resilience
- Design against extreme and exceptional loading
- Project delivery models
- Innovative construction methods
- Modular and pre-fabricated construction
- Additive printing construction
- Building Information Modeling
- Forensic engineering
- Structural control and monitoring
- Strengthening and requalification of structures
- Codes and guidelines



Eric Tabarly Bridge © Michel Royer-Muller



## Call for Papers

Authors wishing to present a paper in accordance with the themes and topics are invited to submit their paper online using the web-based peer-review submission system operated by the Symposium Secretariat. Please note that hard copies, emails or fax submissions will not be accepted.

The Scientific Committee will review the papers submitted for acceptance as either oral or poster presentations. To submit a paper, authors must use the template for abstract and full-paper provided by Scientific Committee available to download the Symposium website [www.iabse.org/Nantes2018](http://www.iabse.org/Nantes2018).

### Abstract Submission

An abstract of the paper must be no longer than 300 words, should summarize the contents of the paper and clearly indicate the relevance to the theme and topics of the Symposium.

**Abstract Submission deadline is September 15, 2017.**

Information on the acceptance of abstracts and preparation of full papers will be provided by October 30, 2017.

### Full Paper Submission

Full papers (max 8 pages + 2 pages short version) should be submitted before January 15, 2018. Authors will be notified on the acceptance of their full length papers by April 15, 2018.

Authors of accepted papers are expected to attend and present their papers at the Symposium.

## Conference Proceedings

All papers accepted by the Scientific Committee for oral or poster presentation will be published in the Symposium Report. The Report will be available in electronic format at the beginning of the Symposium. The publication of each paper is conditional upon the presenting author registering to attend the symposium.

## Time Schedule

### Important dates for the Symposium

September 15, 2017	Deadline for receipt of abstracts
October 30, 2017	Notification of acceptance of abstracts
January 15, 2018	Deadline for receipt of full papers
March 1, 2018	Mailing of Final Invitation
April 15, 2018	Notification of acceptance of full papers and announcement of presentation types
May 15, 2018	Registration deadline for all presenting authors
May 31, 2018	Deadline for early-bird registration
September 17-18, 2018	IABSE Annual Meetings
September 19-21, 2018	Symposium



*Buren Rings © Médiathèque  
Nantes-Saint-Nazaire*





## Young Engineers Program

All participants born in or after 1984 will benefit from a reduction in their registration fee. In addition, any main author born in or after 1984, who personally presents his or her own paper at the Symposium, will be considered for additional recognition. An independent jury will select two contributions from young authors-oral or poster- and each will receive a prize of 2,000 CHF each. The prizes are offered by the IABSE Fellows and the Organizing Committee and will be presented at the Closing Session of the Symposium.

On September 19, 2018, an evening networking event will be organized to promote the interaction of Young Engineers with IABSE Fellows and symposium attendees.

## Exhibition and Sponsorship

A commercial exhibition is planned at the Symposium venue. This offers a unique opportunity for companies to display their projects, products and services.

Companies interested in exhibiting can find information on the Symposium website and are invited to contact the Symposium Secretariat as soon as possible to confirm current availability of exhibition space.

A sponsorship program is also available, to allow corporate partners to interact and engage with the Symposium delegates and the engineering community.

For more information please visit [www.iabse.org/Nantes2018](http://www.iabse.org/Nantes2018) or contact [info@iabse-nantes2018.org](mailto:info@iabse-nantes2018.org)

## Technical Visits

Technical visits to interesting projects and to research facilities guided by local engineers are planned during the Symposium. Visits will also be open to accompanying persons. More detailed information will be available in the Final Invitation and the symposium website.



*Project of the new Railway Station of Nantes built with UHPFRC © Médiathèque Nantes-Saint-Nazaire*





*Wind tunnel of the CSTB © Florence Joubert and swell basin of the Ecole Centrale Nantes © ECN*



*Saint-Nazaire Bridge and Loire Estuary © Médiathèque Nantes-Saint-Nazaire*

## Social Program

A social program will be organized for all symposium delegates and accompanying persons, including the Icebreaker Reception, Welcome Reception and the Gala Dinner. An accompanying tour will be organized.



*« Machines de l'île » © Gérard Grillaud*



*Lu Tower © Médiathèque Nantes-Saint-Nazaire*







## How to travel to Nantes

### By Plane

The International Airport is located 20 minutes away from the Convention Center by shuttle bus and serves 65 international destinations by direct flight; most European capitals within two hours.

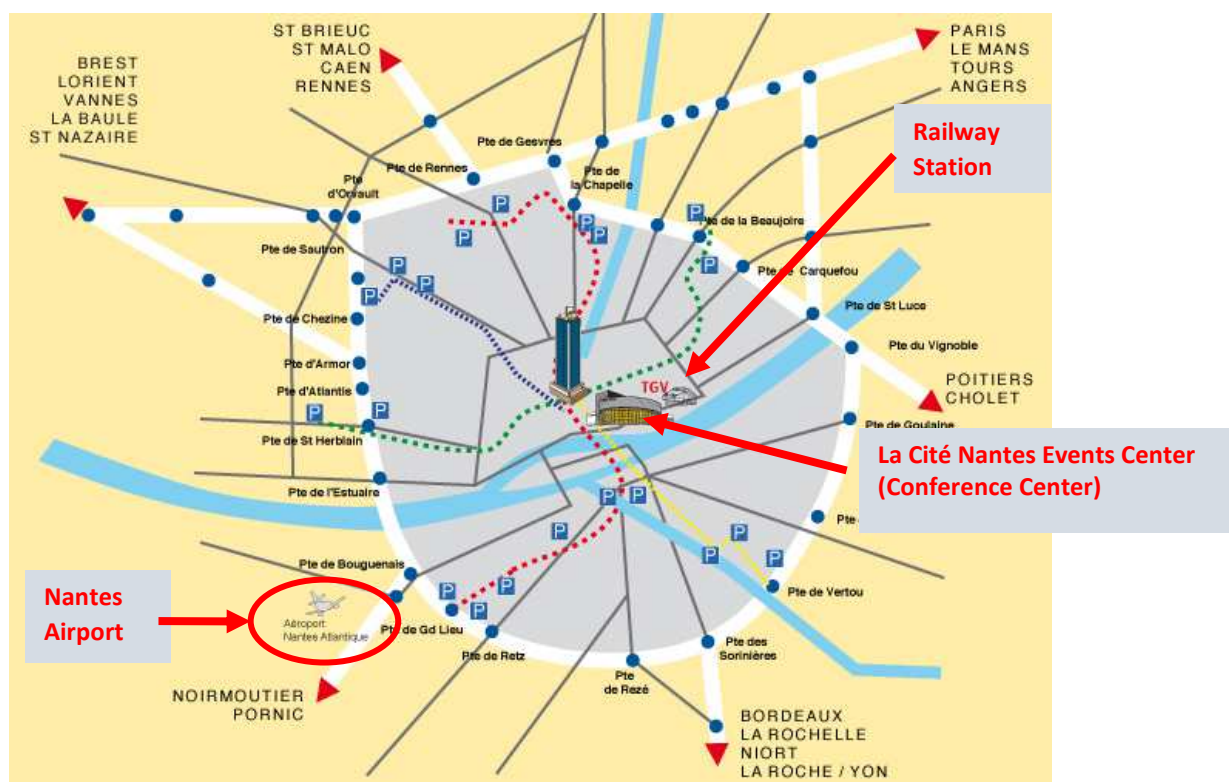
### By High-Speed Train

The station is located in the center of Nantes, in front of the Convention Center. There are 21 daily trains to Paris, a train every hour (2 hours travel time from/to Paris).

## About the Venue

La Cité Nantes Events Center is easy to reach. Located in the city center, just a 5-minute walk from the high-speed train station (South exit) and a 20-minute shuttle ride from the airport, La Cité is served by excellent transport links:

- Tram: line 1 - «Duchesse Anne - Château des Ducs de Bretagne» tram stop, one stop from the TGV railway station (North exit)
- Airport / city centre shuttle bus: every half hour - «Cité Internationale des Congrès» stop
- Busway: line 4 - «Cité Internationale des Congrès» stop.
- Bicloo self-service bikes and Marguerite self-service cars: stations at La Cité.
- 450 parking spaces are available underneath La Cité and 2,000 additional parking spaces in close walking distance. Exhibitors are allocated a temporary parking area with direct access to la Cité's exhibition areas.





## About Nantes

Nantes is the largest city in western France, located on the Loire River, 50 km from the Atlantic Coast. The city is the sixth largest in France, with a metropolitan area of about 900,000 inhabitants. It was one of the major cities of the historic province of Brittany and the ancient Duchy of Brittany.

In 2004, the magazine "Time" named Nantes as "the most liveable city in Europe". In 2010, Nantes was named a hub city for innovation in the *Innovation Cities Index* by innovation agency 2thinknow. In 2013, Nantes held the title of European Green Capital, awarded by the European Commission for its efforts to reduce air pollution and CO2 emissions, for its high-quality and well-managed public transport system, and for its biodiversity with 3,366 hectares of green spaces and several Natura 2000 zones which guarantee protection of nature in the area. Since then, the city of Jules Verne is regularly top ranked among the cities where to live.



## A stunning heritage, the result of audacity and tradition

Nantes' rich and turbulent past unfolds throughout the city, being successively a port open to the world, a driving force for the shipping industry, a source of inspiration for many surrealists, and for Jules Verne's imaginary worlds.

Nantes is an appealing and varied destination for tourists, with an architectural, historical and industrial heritage marked by the medieval streets (Bouffay area), the great maritime adventures (Graslin area and Ile Feydeau) and listed industrial buildings, now converted into cultural venues thanks to the imagination of leading modern architects (Ile de Nantes area).

The regional capital is full of delightful cultural and artistic surprises, one of the leading creative cities in France. From the Castle of the Dukes of Brittany to Lieu Unique, Nantes-Angers Opera, Hangar à Bananes, the Machines de l'Île, the Memorial to the Abolition of Slavery, the open-air museum Estuaire, as well as festivals and a rich architectural and historical heritage.



"Belem" in the Nantes harbour © Phototèque Nantes



"Harmony of the Seas" coming out of the Saint-Nazaire naval shipyards © Bernard Biger - STX France

Equally attractive, the Pays de la Loire region abounds with leisure activities, cultural visits, gourmet itineraries, nature walks and enchanting resorts. There are so many ways to discover the region, its food specialties and treasures including:





- The Loire Estuary with cycling lanes all along
- The picturesque medieval town of Clisson and its Tuscany-looking surroundings
- The Muscadet vineyards
- La Baule with its 9km-long sandy beach, the longest in Europe
- Saint-Nazaire and the magic world of transatlantic passenger ships
- The medieval town of Guérande, and its surrounding salt marshes
- The Brière natural reserve
- Le Croisic and its fishing port

## About IABSE

The International Association for Bridge and Structural Engineering (IABSE) was founded in 1929. Today, IABSE has members in over 100 countries and 50 National Groups around the world. IABSE's aim as a technical society is to promote the advancement of structural engineering practice while taking into account technical, economic, environment, aesthetic and social aspects. IABSE deals with all structures and with all materials.

To fulfill its mission IABSE organizes conferences and publishes the quarterly journal Structural Engineering International (SEI), conference reports, as well as books reflecting the work of its technical groups. It creates Working Groups, as required by needs and technological progress, offers activities within National Groups of IABSE, supports Young Engineers with a program and presents annual awards for outstanding achievements in research and practice that advance the profession of structural engineering.

### For more information contact:

#### IABSE

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#### Symposium Secretariat

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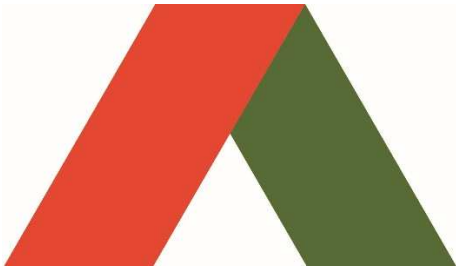
## About AFGC

The Association Française de Génie Civil (AFGC) is a forum for people working in civil engineering (engineers or technicians, architects, academics or students). The AFGC is an ideal place to meet and exchange ideas. The Association's aim is to link the world of materials to the world of structures, the world of education and research to the world of designing and building and to make the profession of Civil Engineering more appealing to young people.

The members of the AFGC are the professional construction and materials federations, and major public-sector and private-sector infrastructure developers. It currently has more than one thousand members (individual or group memberships).

Through close contacts with the IABSE (International Association for Bridges and Structural Engineering), RILEM (International Union of Laboratories and Experts in Construction Materials, Systems and Structures), fib (International Federation for Structural Concrete) and the ACI (American Concrete Institute), the AFGC provides invaluable links between French civil-engineering research and practice and the international scientific community. The Association is a network through which French engineers and researchers working abroad can keep up with French know how. Its ambition is to promote French engineering throughout the world.

For more contact: [afgc@enpc.fr](mailto:afgc@enpc.fr); [www.afgc.asso.fr](http://www.afgc.asso.fr)



40<sup>th</sup> **IABSE** Symposium

# NANTES 2018

September 19-21, 2018 Nantes, France



*Cheviré Bridge © Médiathèque Nantes-Saint-Nazaire*

## Supporting Organizations

The Symposium is supported by **CSTB** (Centre Scientifique et Technique du Bâtiment), **ECN** (Centrale Nantes), **IFSTTAR** (French Institute of Science and Technology for Transport, Development and Networks) and **Nantes University**.



[www.iabse.org/Nantes2018](http://www.iabse.org/Nantes2018)