Egis will partner the future project owner who will be responsible for awarding concessions for the project through 2024.

CDG Express: an attractive and strategic project
With 66 million passengers in 2015 and over 80 million a year forecast by 2025, Paris-CDG is Europe’s second busiest airport. Once it has been completed in 2023, the CDG Express rail link (32 km-long) will take passengers from the airport into the heart of downtown Paris in just 20 minutes.

By providing France’s capital city with state-of-the-art transport, the project will showcase the Paris-CDG airport hub and boost the competitiveness of Paris and the surrounding region. It will also be a big plus for Paris’ bid to host the 2024 Olympic Games.

A highly technical and complex project
This project is of exceptional technical complexity and will require technical interaction between the airport authorities, the French national rail network operator, local government in densely-populated urban areas and Gare de l’Est rail terminal right in the heart of the city. Work will take place at night to minimise the impact on network traffic.

Technical assistance “made in Egis”
Egis will provide technical assistance services to the project owner throughout the operations. This work will include the following aspects: reviewing the pre-project design phase; assistance with preparing and negotiating concession, design-build, and operation-maintenance agreements; help with raising bank financing; reviewing the project design phase and providing assistance throughout the works phase; and assistance in deploying infrastructure operating systems.

Along with the various contracts already secured as part of the Grand Paris building project, this ambitious project will boost Egis’ profile in the Greater Paris region.
Upgrading the drinking water distribution systems of the Federal District of Brazil is no stroll in the park! Ten years ago, this urban area—which includes the federal capital (Brasilia)—was already Brazil’s most densely populated state (402 inhabitants/km² in 2005). Water requirements are enormous and being driven constantly higher by a growing population. The state of the water network is a major issue and the consortium headed up by Egis will conduct diagnostic reviews that include an intensive 8-10 week field measurement campaign. As Bruno Olivier, Major Water Project Director at Egis, explains, “hydraulic modelling is the nerve centre of the whole study. Egis has the resources needed to conduct a comprehensive field study that accurately maps out the existing network. But modelling the network is not much use without a measurement campaign indicating how to supply it! The resulting measurements will be compared with estimates of the requirements of the population and we will present the client with a range of development scenarios for each locality surveyed. The options actually selected will then be subject to detailed project analyses for distribution to the various works contractors.”

Unlocking synergies

Egis has been in Brazil since 2011 and the Group has all of the necessary local resources and expertise needed to conduct this type of project. Bruno Olivier adds, “our teams in the field and those of our partners are sufficiently familiar with the infrastructure to be operational in a very short time. Our big advantage here is our expertise in “fine-tuning the hydraulic model” (i.e., the field measurements) as well as carrying out the actual modelling itself.”

A new aviation skills training centre for Abidjan

Egis, has teamed up with Camas—a French group specialised in professional training for the aviation and airport industry—to set up a new aviation skills training centre in Abidjan (Côte d’Ivoire).

Marion Nykolyszyn is the Operating Manager of the new centre, known by its French acronym of CMA (meaning aviation skills centre). According to Marion, CMA reflects, “the desire of the two groups to combine their resources to offer African businesses international standard training solutions tailored to aviation professionals.”

Air cargo, safety and security, dangerous goods, planning/operations, certification and audit, customer service and correspondence, logistics, management, etc. The training programmes provided by CMA are tailored to the required skill-sets of the personnel of partner airports in which Egis is both a shareholder and a key technical partner in Côte d’Ivoire (AERIA), Gabon (ADL) and Republic of the Congo (AERCO), as well as to airport concession operators and service providers in West and Central Africa, airlines, public bodies and civil aviation authorities and air traffic control service providers. As Marion Nykolyszyn points out, “the Abidjan site was chosen for its attractiveness in a country with huge air traffic growth potential.”
Kola Potash mining project feasibility study (Congo)

As part of a French Consortium, Egis has been commissioned by Kore Potash Limited to conduct a feasibility study for the Kola Potash mining project (formerly known as Sintoukola) in the Congo.

The study will cover the design and installation of infrastructure for a potash mine aiming to produce and export 2 million tonnes of ore (to be marketed as fertiliser) extracted from sylvinite at a depth of over 250 metres.

The mine is located in southern Republic of the Congo, 100 km north of Pointe Noire, at two sites 40 km apart: the mining site (extraction) and the coastal site (processing plant, base camp and port).

Egis’ brief covers:
- conducting a feasibility study over a 14 month period,
- submission of a turnkey Engineering, Procurement, and Construction (EPC) tender at the end of the feasibility study,
- submission of an operation-maintenance (O&M) tender covering transhipment of the ore by barge to ships lying offshore (offer headed up by Louis Dreyfus Armateurs),
- client assistance with project financing.

Egis will be tasked with designing the port, platform and road infrastructure, buildings and “water” infrastructure, i.e., seawater intake (including the pump station), freshwater intake (deep drilling) and storage tanks; domestic and industrial wastewater treatment, dissolution tank / brine dilution and discharge into the sea (outfall).

Egis will also be in charge of preparing and overseeing the geotechnical and hydro-geological reconnaissance work.

Ukraine road network upgrade and financing contract awarded to Egis

Thanks to 20 years of fruitful partnerships providing technical assistance for its transport infrastructure, Egis has been awarded a contract to study solutions for developing and financing Ukraine’s road network.

In recent years, the Ukrainian road sector has been experiencing a crisis due to the absence of a development strategy and the inadequacy of investments, leading to a significant deterioration in the road network.

As part of a reform to enhance the efficiency of public expenditure, the Government has adopted legislation to boost the capacity of the national Road Fund.

Egis has been retained to conduct a study of financially sustainable solutions for the Road Fund (i.e., tolling, road user charges, concession arrangements, grants, etc.), followed by the selection of 10 pilot projects where the chosen solutions will be experimented.

Moreover, since January 2016, Egis has been partnering the implementation of the transport section of the EU-Ukraine Association Agreement and the development of national transport strategy through 2030.

Implementing Public-Private Partnership (PPP) projects by means of Output - and Performance - based Road Contracts (OPRC) and the construction of toll roads are key components of this Strategy.

Thanks to its continued support for strategic projects, Egis is partnering the long-term development of the Ukrainian road sector.
The Sofia-Plovdiv line, the Bulgarian section of the international railway stretching from Dresden to Istanbul, will soon be getting a facelift! Since February 2015, Egis has been at work, upgrading the first section of the line in Western Bulgaria: a 45 km stretch between Ihtiman and Septemvri.

The Sofia – Plovdiv rail link badly needs to be brought up to standard and EU funding has been approved to create a quality connection between Western and Central Europe and the Middle-East and Asia. The idea is to target speeds of 160 km/h and 120 km/h for passenger and freight trains, respectively.

Egis’ French, Bulgarian and Spanish teams have been working for the past two years on the project survey phase for the National Railway Infrastructure Company. Alongside Eurotransproject, a local firm of engineering consultants, they have been focusing especially on the Ihtiman – Septemvri line. As Vincent Rainot, Rail project manager at Egis, points out, “our work involves upgrading the existing 23 km of the line and building 22 km of new tracks. This includes designing 11 tunnels and 4 viaducts. The new infrastructure involves considerable technical constraints requiring specific expertise in rail, geotechnical, civil and structural engineering.”

In 2015, Egis already provided the same client with technical assistance in devising a new policy for tolls and charges for accessing and using the Bulgarian rail network. And more recently, the Group was entrusted with monitoring the upgrade of another key national rail link, the 290 km Plovdiv – Burgas line which stretches as far as the Black Sea.

**Eastern European networks in need of modernisation**

In Central and Eastern Europe, Egis is monitoring the plethora of current rail projects very closely and is offering its services and specialist skills from Croatia to the Baltic countries, via the Czech Republic, Serbia, Romania and the Ukraine.

Vincent Rainot believes that “trends in Central and Easter Europe reflect what happened in Western Europe where countries used EU funding to develop their rail programmes. Egis is in a position to seize all of these opportunities. It is up to us to come up with the winning sales and production pitch!”

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1 Bulgarian rail infrastructure manager
2 Combined length of 10 km, 4 covered sections, 6 tunnels bored using conventional methods and 1 using a tunnel boring machine
3 Combined length of 2.5 km, one concrete girder bridge and 3 reinforced concrete bridges

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Egis is a key player in the rail sector right across Europe, particularly in the East where there are enormous needs in terms of regional integration, improved access and upgrading of outdated transport infrastructure.
Réunion Island: a buoyant economy

In spite of the global downturn, the economy of Réunion Island has picked up considerably since 2014, especially in construction and civil engineering, on the back of the New Coastal Highway and a number of other major projects in the construction, water and transport sectors.

Réunion Island, which is both a French département and overseas territory, is a jewel in the heart of the Indian Ocean. Between 1950 and 2000, it witnessed a threefold increase in its population which now stands at 845,000. In the wake of the 20 year boom of the 1990s and 2000s which produced a number of showcase projects such as the Route des Tamarins highway, Réunion is still doing well despite a slowdown in its economy.

Egis has been in Réunion for the past 20 years at two key sites located at Sainte-Marie and Le Port – the latter is currently hosting the New Coastal Highway (NCH) project team. The Group’s Island operations focus on four main activities: transport, construction, water and the environment. As Anthony Simon, Head of the Indian Ocean region within Egis’ Urban Development, Roads & Mobilities Business Unit explains “we have around 35 engineers and technicians on the Island providing consulting services and expertise to both public and private sector stakeholders. We are trusted partners for a wide range of key players in Réunion: the regional government, the département (county), Roland-Garros Airport, and various different transport authorities and local councils.”

Egis is determined to continue playing an active role in both the expansion and international development of the region. Antony Simon continues, “Egis has partnered many different projects, including Route des Tamarins highway, Grand Prado wastewater treatment plant, the regional road network traffic management system, Port-Ouest harbour basin and the irrigation of the western coastal area. And more recently, as well as the big NCH project, for which Egis is prime contractor, we’ve also been closely involved in building reserved lanes for public transport in Saint-Pierre, building the new town of Beausejour in Sainte-Marie, renovating and extending Saint-Pierre hospital, and extending the passenger terminal at Roland Garros Airport.”

Anthony Simon also expresses confidence and optimism when speaking about the future: “despite the Island’s limited size, there are still great prospects, underpinned by major financing programmes such as the ERDF1 2014-2020 programme and French Government-Region funding for major infrastructure projects. In construction, a range of tax breaks with various policy objectives are also helping to stimulate the sector. Lastly, the fact that we are not far from Mayotte, which became France’s 101st département five years ago, is also generating work for our Réunion-based teams.”

1 European Regional Development Fund 2014-2020 (France)
**A cable car for getting back up to La Montagne**

CINOR\(^1\) has entrusted Egis with the Project management consultancy (PMC) contract to build a cable-car system in Saint-Denis de La Réunion, linking the neighbourhoods of Bellepierre and La Montagne. Egis is heading up the consortium\(^2\) and will oversee the entire project from the technical engineering and regulatory survey phase, through works launch and overseeing the design-build tender process. The densely-populated district of La Montagne is perched 375 metres above the town centre and separated from the rest of town by the natural barrier of Saint-Denis ravine. The new 2.8 km cable car line, complete with three or four stations, will provide a safe and competitive transport alternative to the only existing road which is completely saturated at rush hour, as well as giving a boost to urban development in La Montagne.*

\(^1\) Communauté intercommunale du Nord de La Réunion (Northern Réunion Interdistrict Community)

\(^2\) Egis (lead company), AJI, TIM Ingénierie, Sodiac (semi-public company) and Biotope

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**Containing the risk of flooding**

In the catchment areas around Ermitage and La-Saline-les-Bains, 850 mm of rain can sometimes fall in just 24 hours! Local houses, roads and natural areas – including the lagoon – are all at risk of flooding. As part of a project to contain these risks, Egis is prime contractor for a €25 million flooding containment and protection programme that involves building breakwaters and diversion channels, recalibrating gullies and creating retention areas. This major project is the fruit of five years of concertation between Saint-Paul local council (commune), Réunion marine wildlife sanctuary, administrative departments and local people. Construction work will factor in economic, environmental and marine considerations and, once it has been completed four years from now, 4,800 people and 1,600 buildings will no longer be at risk of flooding.

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**Better quality water in three years**

57% of Réunion’s water customers receive inadequately treated drinking water, of which 5% is deemed to present a high microbiological risk. Consequently, in 2016, the local Prefecture and the Indian Ocean regional health authority launched a three-year action plan to improve the island's drinking water. As Project management consultants (PMC), Egis will be involved in designing and building two water purification plants for the people of Saint-André, and one plant for the population of Saint-Pierre. Thanks to suitably adapted treatment facilities, the plants will provide a secure supply of drinking water for over half of all water users in these two districts.

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**An alternative to using landfill for all household waste**

SYDNE\(^*\) has begun building a multi-sector waste recovery centre in the North-East of the Island. From 2021, this facility will be able to process 230,000 tonnes of household waste every year. Egis will be partnering SYDNE\(^*\) over a seven-year period and helping it to design, build, set up and operate the centre. Egis will also provide assistance with the financial and contractual structuring of the project. For the technical aspects of this mission, the Group is leveraging the expertise of its cross-disciplinary teams and using the services of EY and Claisse & Associés for financial, legal and contractual matters.

\(^*\) Syndicat intercommunal de traitement des déchets du Nord et de l’Est de l’île de La Réunion (Intercommunal household waste treatment authority).

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**New buildings for the Southern and Northern sites of La Réunion Hospital**

In late 2012, Egis was awarded prime contractorship of a project to renovate part of the existing hospital, and enlarge the central building at the Saint-Pierre site in the South of the Island. The aim is to improve conditions for patients, expand the care offering and enhance both accessibility and medical efficiency. In total, the project will result in 23,000 m² of new facilities and 12,700 m² of restructured units and is scheduled for delivery in 2020. At the same time, the Nord Félix Guyon site, the island’s third-heaviest consumer of electricity, has asked Egis to design a new on-site back-up generating facility. This power plant will need to enable the hospital – especially the intensive care unit – to continue functioning for at least three days in the event of a power cut and it is scheduled for delivery in mid-2017.
Egis is partnering the Region’s road building projects

The Region has decided to launch a stimulus programme based around public infrastructure building. It includes the Trans Eco Express programme to build reserved lanes for public transport in order to ease road traffic congestion and enhance public transport efficiency. As part of a PMC contract, Egis has been providing pre-project assistance for the past year to the Regional Roads authority with 150 projects, including initiatives to develop, upgrade and operate the network as well as specific programmes and upkeep operations. This mission involves developing a coherent overall vision of local government-backed projects and ensuring the accuracy of the commitment and completion forecasts for the various different operations.

Reserved lanes for public transport in Saint-Pierre, Saint-Louis and L’Étang-Salé

CIVIS* has awarded Egis prime contractorship over three projects to create reserved lanes for public transport in Saint-Pierre, Saint-Louis and L’Étang-Salé. The aim of this initiative is to restructure existing bus services to offer users faster and more frequent links between these districts. It is part of CIVIS’s new programme to provide high-quality public transport (via the Néo network) throughout the area.

As prime contractor, Egis is in charge of project oversight and redevelopment, buildings, urban integration and landscaping, and hydrological and regulatory survey work.

Supplying drinking and waste water treatment facilities to Mayotte

The rapid increase in the population of Mayotte and the related urbanisation are putting considerable strain on the existing drinking water and wastewater treatment systems. To comply with EU directives that require part of the network to be brought up to standard by 2020, and further to the Plan Eau Dom programme to provide support for drinking water and wastewater treatment services, Caisse des Dépôts is partnering SIEAM* as part of a €250 million investment programme covering the period through 2020. It is Egis (via the Egis Mayotte office) that helped SIEAM finalise the programme and financing plan in which Caisse des Dépôts is investing.

Upgrading the Island’s transport infrastructure

Egis is helping the Island’s different transport authorities, including CIVIS* and CINOR*, to deploy new ticketing solutions and an operational support and user information system on various different routes in their respective networks. These new systems – which will need to be interoperable across the Island in the very near future – are aimed at responding to user needs and making public transport safer and more reliable, modern and pleasant.

Upgrading access and lifting appliances in Takamaka I

Egis has signed a contract with the energy utility EDF to replace freight lifts, dismantle the lift and renovate the asbestos-covered metallic structure of the access shaft in Takamaka hydroelectric power station. This electricity production facility is a listed site located in Takamaka Valley in the commune of Saint-Benoît, considered one of the world’s rainiest places (annual rainfall of 700 cms). Egis will be in charge of project management, from drafting specific technical specifications through works oversight and acceptance.

June 2017 - egis contact
The New Coastal Highway
Lining up the challenges!

In the middle of the Indian Ocean, Egis is grappling with the biggest ever project undertaken on the Island of Réunion – the New Coastal Highway (NCH): an enormous 12.5 km-long stretch of motorway is beginning to take shape just off the South-West Coast, comprising breakwaters, offshore viaducts, etc.

This project, co-financed by the French Government, the European Union and the Region of La Réunion, is hugely important both from a road security and an economic development perspective. Once it has been completed, the NCH will constitute the primary link between the administrative capital of Saint-Denis and the La Possession commercial port. It will replace the existing coastal road which has become too dangerous because of frequent landslides all along the cliffs.

The NCH was designed from digital mock-ups and has all the hallmarks of a high-tech project: the sheer size and complexity of the offshore structures – far from the cliffs between 5 and 12 metres above the water – in an area that is very exposed to swells and tropical storms; the integration of environmental factors and the challenges of deploying such a large body of expertise at a single site.

Simultaneously coordinated projects
As prime contractor, Egis has been coordinating the different operations of this enormous project for the past six years. Aside from designing an infrastructure comprising breakwaters/offshore viaducts and the complex geometry involved, the Group has been tasked with managing the project, supervising the work, tracking deadlines and costs, and geotechnical and civil engineering work. The Group is also responsible for the traffic and rail management infrastructure required to carry out a subsequent study of the feasibility of building a tramway-type reserved lane transport system.

As Alain Gagey, Project Manager at Egis explains, “we use a platform system to coordinate expertise more effectively and manage the multiple project interfaces. Project management is in constant contact with the project owner’s operational management team to try to keep the conception process moving forward. During the design phase, there were approximately 60 people working on the project, including around 15 in project management.”

After nearly 3 years of work, the project ramped up in 2016 with delivery of La Possession interchange at the western entrance to the coastal highway. Forthcoming milestones: delivery of Grande Chaloupe Viaduct in spring 2017, continuation of work on the breakwaters on the way out of Saint-Denis and to the east of Grande Chaloupe, and – last but not least – stage-by-stage construction of the coastal highway viaduct which is rapidly taking shape just offshore!

**Length:**
- 12.5 km (including 5.3 km of viaducts and 6.7 km of breakwaters)

**Reference speed:**
- 90 km/h

**Forecast traffic:**
- 60,000 vehicles/day

**Project contractors:**
- Grande Chaloupe Viaduct: consortium made up of Eiffage Travaux Publics, Razel-Bec, Saipem, NGE Contracting, Guintoli
- Breakwaters: consortium made up of GTOI, SBTPC, Vinci Construction Terrassement
- 5,400 metre-long viaduct: consortium made up of VINCI Construction Grands Projets, Dodin Campenon Bernard, Bouygues Travaux Publics, Demathieu Bard Construction

From left to right: Isabelle Skubala, Stephan Bernhard, Delphine Guillart, Céline De Plasse, Olivier Gonthier, Alain Gagey, Christophe Osterreyc, Guillaume Danan, Philippe Kousaot, Arnaud Prunier, Estelle Vaure, Laurent Poulizac, Steven Lecorre.

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Did you know?
The environmental performance of a construction site is tracked at several different levels:

- The environmental officers of the construction companies
- The Prime Contractor (Egis)
- Project management environmental consultancy (Biotope)
- Operational management of the New Coastal Highway
- Government police and environmental services
- The Region, which submits an environmental report to the project technical committee
- A Scientific Committee comprising independent experts, consulted on a regular basis
Giant Viaduct columns!

Nearly three years after work first kicked off, the New Coastal Highway on the Island of Réunion is progressing nicely. In summer 2016, the first columns of the coastal highway viaduct were put in place.

This 5.4 km-long structure will be “France’s longest viaduct” and the showcase feature of Réunion Island’s brand New Coastal Highway. Work kicked off in January 2014 and, when it is completed in 2020, the highway will comprise a gargantuan 12.5 km-long stretch of road infrastructure linking the towns of Saint-Denis and La Possession in the north and west of the Island, respectively.

Building the Viaduct between 20 and 30 metres above sea level requires the deployment of exceptional resources, including Zourite (“octopus” in creole!) an enormous jack-up barge, and a 278 metre-long launching rail weighing 2,500 tonnes (1/3 of the weight of the Eiffel Tower!) needed to lay 1,176 voussoirs transported on lowbed tractor-trailers. Alain Gagey, Project Manager at Egis, attempts to explain the process: “the components of the viaduct columns which are pre-fabricated at a specially-built site in the Port, are loaded one by one onto the barge. It then heads out to sea under its own steam and stabilises its load by jacking up on its eight “legs”. Then, with the help of an overhead travel crane with a lifting capacity of 4,800 tonnes, placed 33 metres above the bridge, it places the lower part of the column, comprising the foundation slab and part of the shaft known as the base plate, on the ocean floor. Column height above sea level is variable and can be up to 3 metres above the level of the Indian Ocean. The seabed has already been meticulously prepared by a high-powered dipper, eliminating the impact of swell.”

Zourite makes two trips for each of the 48 columns comprising the viaduct: the first to place the shaft base plate and the second to install the upper part of the shaft, together with the cross-beam and shaft mega-voussoir (i.e., the column table which is vertical to the shaft). Alain Gagey adds “the 96 pre-fabricated components of the coastal highway viaduct columns will be securely put in place over a 24-month period between 2017 and the Summer of 2018, at a rate of one offshore installation trip every 15 days”.

The structure, built on 48 columns rising out of the ocean, will be the longest viaduct in France!
Foundations offshore!

The Egis geotechnical engineering teams allocated to the main viaduct are confronted with the exceptional challenge of carrying out work in the open sea. The ultimate objective is to provide the future motorway with solid foundations anchored over 15 metres down below sea level.

This location on the northern coast of Réunion can be exposed to very rough seas. We’re in the middle of the ocean here! The strain placed on the columns by the effect of the swell, weather hazards (cyclones, trade winds, etc.), and the risks (albeit small) of earthquakes, all need to be factored into the structural design. Not to mention the bad weather that sometimes forces contractors to stop working for safety reasons, and to factor these periods into their work schedules.

Preliminary studies before any offshore work
As prime contractor, Egis is responsible for validating and overseeing the consistency of studies produced by the consortium headed up by Vinci: it ensures that the technical solutions chosen for each support represent the best performance/cost trade-off from the project owner’s perspective.

At this very moment, offshore work is continuing, including major marine earthwork and ground improvement operations for 12 bridge columns. As Rémy Mattras, Geotechnical project manager at Egis, explains, “digging is conducted by the mega-dipper Pinocchio, belonging to SDI and equipped with a 400 tonne excavator. It involves making an octagonal hole whose diameter is 2 metres wider than the slab to be placed in the seabed. The resulting hole is immediately filled with an appropriate bedding material. Soil improvement using vibratory compaction is only needed for around 10 columns in zones where loose sands are too deep to be removed, or for zones with specifically localised geotechnical anomalies.”

The many different solutions deployed, plus having to master the constraints involved in working offshore make this a truly unique engineering project.
From the “BIM bang” to “digital engineering”

“Digital engineering”... Behind this mildly scientific term lurks the engineering of the future – poised to leverage the vast digital technosphere to revolutionise the very act of designing and building something.

With Building Information Modelling the construction industry is undergoing a transformation similar to that experienced by the manufacturing industry 15 years ago with the deployment of digital mock-ups and related applications right across the supply chain. This shake-up coincides with another even bigger societal phenomenon, the Internet of things (or IoT) and the arrival of Big Data onto the marketplace. And it is this whole notion of digital engineering that is beginning to emerge from this extraordinary flurry of ideas (i.e., BIM, IoT and Big Data). So what is so amazing about all this? Have our customers’ imperatives changed so much that we now need new concepts just to grasp them? Well, to judge by the facts before us, no. However, what is changing is what customers now expect from us as engineers! What they are now challenging us to do is to keep their own customers satisfied, i.e., operators and end users, and this is where digital engineering comes into its own, by placing the whole notion of usage at the very heart of the design process.

When the data is the model...
A fresh qualitative leap has now occurred in modelling thanks to generative design which can mimic nature’s evolutionary approach in iterative, incremental and adaptive mode. Moreover, when tens of billions of objects are connected in the very near future, we will have a much more detailed idea of how the objects that we design and operate are actually used. We will be able to harness immersive applications and virtual reality to integrate client know-how, to test how our installations are working on a 1:1 scale, and to validate maintenance and upkeep operations, even in downgraded situations. The development of additive manufacturing technology (3D Printing) associated with digital modelling tools is also set to radically shake up our design methods.

Adaptation is up and running!
Aside from the disruptive technology mentioned above, the digital revolution is also helping us to develop new business models. In engineering, innovation was long focused on techniques and technologies but we now have masses of data at our disposal for which we need to find uses and customers. Moving into the future, our innovation efforts will need to focus not so much on data but on how to manipulate it and on the environment needed to process it. But let’s not fool ourselves! All of the stakeholders in the construction sector will be needed to drive these changes as well as enough time to get everyone on board. But, at the end of the day, is adaptation not part and parcel of being an engineer?