



Brest, the first urban ropeway in France

Slide 1

Good afternoon dear listeners,

I had the chance to be project manager on the urban cable car project of Brest. The 1st in France. It wasn't the most expensive, but it was actually the most exciting, in my engineer's life, a unique opportunity .

Because this type of transportation was completely new in the city. It exists elsewhere in the world but not yet in an urban context in France.

It was an innovative project in public transport, but also a regulatory project in which we embarked together, with the French regulatory authorities (STRMTG) which helped us to land the project while maintaining the safety requirements at a very high level.

We also had to convince our public opinion. People is often confused when we tell them we're doing the job for half the money.

Convince that what works to take you on the snowy slopes can also take you to work, take the kids to school with performances comparable to a bus or tram line.

Slide 2

Before the transportation project, there was an urban project.

Brest is known for being located along a one hundred eighty 180 square kilometers natural harbor opening onto the Atlantic Ocean. It is an ideal natural shelter that allowed the creation and the development of one of the largest military naval bases in Europe

And allowed the development of the agglomeration which now has 220,000 inhabitants.

The historic naval base developed along a coastal river called Penfeld.

The Penfeld literally cuts the city in two parts. Down along the river: military and boats. Above, on the granite plateau the civil city and its inhabitants.

The city center has developed for years in a relatively harmonious way between its two banks.

Right bank; the chic center with its street of Siam and its traditional functions of shops and administration.

Left bank; the working class district of Recouvrance, with its sailors and shipbuilding workers.

And in between, the naval base, banned to civilians since World War II. Brest was therefore a city with a hole in the middle that expanded until 1970 relying on its two feet; the military navy and shipbuilding/ repair.

Slide 3

But in seventies, things got complicated.

With the end of military service and the very significant reduction in the resources allocated by the French government to the military effort.

In the space of a few years, Brest has lost nearly ten thousand 10,000 jobs. A real economic disaster for an agglomeration of 220,000 inhabitants.

Efforts have been very important to get those jobs back.

The creation of the Technopôle (high-tech companies, research), new university sites, or more traditional activity areas have allowed to regain its jobs and a new dynamism.

But this economic revival was only caught by the East part of Brest, the left bank. The district of Recouvrance, the district of sailors and ship-workers did not benefit and became very quickly the poorest district of Brest.

There was a real psychological break materialized by the river Penfeld. The investors did not come to the West side.

We have therefore implemented an urban renewal project in the Recouvrance district.



But public intervention has only a limited effect on the economy. You can invest a lot of money on public spaces, equipment, social action, it is not very efficient for business or shops.

But close to the district of Recouvrance, on the right bank of the Penfeld, we had the workshops of the Capucins! A huge “industrial cathedral» which was the symbol of the military shipbuilding of Brest. In 2010, the Ministry of Defense decided to sell to the city, the workshops (4 hectares) and sixteen 16 hectares of land around. We saw the unique opportunity to build a new eco-district in the heart of the city. Relying on the power of attraction of this iconic place of Brest’s working-class culture.

Slide 4

In all Brest families and until the 2010s, there were men (very few women) who worked at the Arsenal. Developing a working-class culture in the sociology of the city.

When we held “open house” days every year during the eco-neighbourhood’s works, there were real human tides. Up to 15,000 visitors to come and see where work the father or brother.

It was a place very present in the minds of all. But it is also completely fantasized by those who had never been able to enter because it was forbidden to civilians.

Given the number of visitors during these visits and witnesses of their emotion, we understood that we were right to rely on this symbol of the Brest working culture.

Slide 5

We have therefore focused the program of this new eco-neighbourhood on three main themes:

- Economic development of course (business and shops...): because the main challenge is to regain an economic attractiveness in this district that has lost many jobs
- Housing to go towards more social diversity. Recouvrance had indeed become the poorest district of Brest and we needed to reintroduce purchasing power to strengthen existing businesses and ensure the success of future businesses.
- And of course culture that could capitalize on the history and the very strong social identity of the Workshops

You have on the slide a few programmatic elements that illustrate these baselines.

Slide 6

In this aerial image you will see that the project site (in orange on the slide). It is actually placed on a rocky spur, partly surrounded by emptiness.

This raised the question of accessibility to this new neighborhood. With the existing infrastructures, it was accessible only from the West from the right bank in a cul de sac.

It is a neighborhood in hyper-center. So it was mandatory to connect it on both sides.

- So we imagined a bridge to connect the site to the left bank. But it was difficult to dock it with the workshops. There is very little space between the workshops and the void. A road bridge was to be extended by a street along the workshops. We did not imagine having cars or buses there. We wanted it pedestrian.
- A pedestrian walkway connected to the left bank tramway station should have a range of four thousand fifty 450 meters. A world record! With the difficulty of convincing visitors that they should walk at least 500 meters.

But the most important difficulty was the crossing of deep draught vessels on the Penfeld River.

Slide 7

The Navy required a draft of 48 meters to pass its highest boats. The shoreline is 25 meters high on the left bank and 28 meters on the right bank. We were over 20 meters short. Therefore a pedestrian walkway should have been mobile. You see on this slide the Recouvrance lift bridge close (500 meters) from Capucins workshop.

Record length, mobile,... so our connection was gone to cost 50 to 60 million euros. The bridge was out, the pedestrian walkway was too.

We had to find another solution.

Several cities in France were working at this moment on urban cable links. We have therefore studied this transportation mode.

Slide 8

We realised that a ropeway solution could connect both sides with excellent performances in terms of:

- Passenger flow: up to 4000 passes per hour
- Safety: cable is the safest ground transportation system
- Speed: crossing takes only 3 minutes flying over the river

Slide 9

But there are very important differences between the mountain cable cars that everyone knows about and those newcomers in the cities. We have to face new demands.

It is first of all: the amplitude of service that is much more important than in the mountains.

An urban transportation system must work:

- Every day all year long
- Very early in the morning, until very late in the evening

An urban ropeway will therefore operate 5 to 6 times more hours in a year than a ski resort ropeway.

This has consequences on how to build it, on its conduct and on its maintenance which will generally have to be carried out at night.

On another aspect, it is public transport for all kind of people encountered in the city.

Its price must be consistent with other transport systems. In Brest, we wanted it to be a line of the public transport network. We decided that it should be accessible with a bus ticket.

Slide 10

We also need to pay close attention to how we build our stations.

In town, space is limited.

In the background, some flats, have beautiful views of the city, the Penfeld or the sea.

We, therefore, asked in the specifications very compact stations, which do not obscure the views.

Accessibility for the disabled, for the elderly are also essential. Ideally, you should be able to access the cab without level step with the sidewalk. If in addition you can avoid the elevator or the escalator, you gain in ease and fluidity in your trip.

In Brest, we took advantage of the terrain to land the cabins on the ground.

Slide 11

An urban ropeway can also be very visible in the landscape. Often with oppositions to projects for this reason.

Integration must therefore be studied with the greatest attention in order to obtain public acceptance.



In France this aspect is regulated in some historical environments by the Historic Monuments Architect. Ours told us “the star of the district is the Capucins Workshops. It’s not the cable car station. I don’t want to see it!”

We therefore housed the station inside the Ateliers by passing the cabins through a hole in the facade. In Brest, we took advantage of the terrain to land the cabins on the ground.

Slide 12

Our stations are discreet. So we would have asked for a pylon with a worked design. But the same Historic Monuments Architect told us:

“The background is very rich. It is urban, it is maritime, it is industrial. You are in a naval base environment with lot of cranes that are very specific elements of the landscape. For the ropeway tower, get inspired by the cranes. Make me a beautiful engineering work!”

Thank you very much, Mister Architect! It is easier and cheaper !

In the end, it turns out, he was right.

After a few critics in the project step: «you could have made an effort on the design!»

As soon as the pylon was erected, it was like if it had always been there. Perfectly integrated with the background.

We have chosen after tender, the builder Bartholet. He was the one that best met our specifications: An efficient cable system. But lot of them knows how to do it well. That’s their job.

Bartholet distinguished himself by an original technical response to contradictory specifications :

- Compact stations for better landscaping
- Vs large cabins and wide platforms for passenger comfort

To solve the equation, he imagined two ways on top of each other on a vertical axis. He named it a “leapfrog system”. Natural in France isn’t it ?

Usually, the 2 tracks are side by side on a horizontal plane. In station you have 2 tracks and generally 3 platforms. The leapfrog allowed to have only one track and 2 platforms. The high and low cabins occupy alternately the only place available in the station.

Slide 13

And since the commissioning, we know a great success with our cable car.

More than 3 million trips have already been made.

With passengers going to work, children at school, visitors to the Capuchins and some days very busy, especially during school holidays.

We also discovered a tourist vocation, unknown in Brest until 2018.

Although Brittany is generally considered to be very touristy, the city of Brest, at the end of the Breton peninsula, Penn ar Bed in the Breton language (where the land ends) attracted less visitors.

It has changed a lot and the cable car has become an important element of this new attractiveness.

Slide 14

The ropeway: the unique public transport vehicle where passengers make selfies !

Slide 15

Thank you for your attention.