

"The way forward for the Eurocodes implementation in the Balkans"

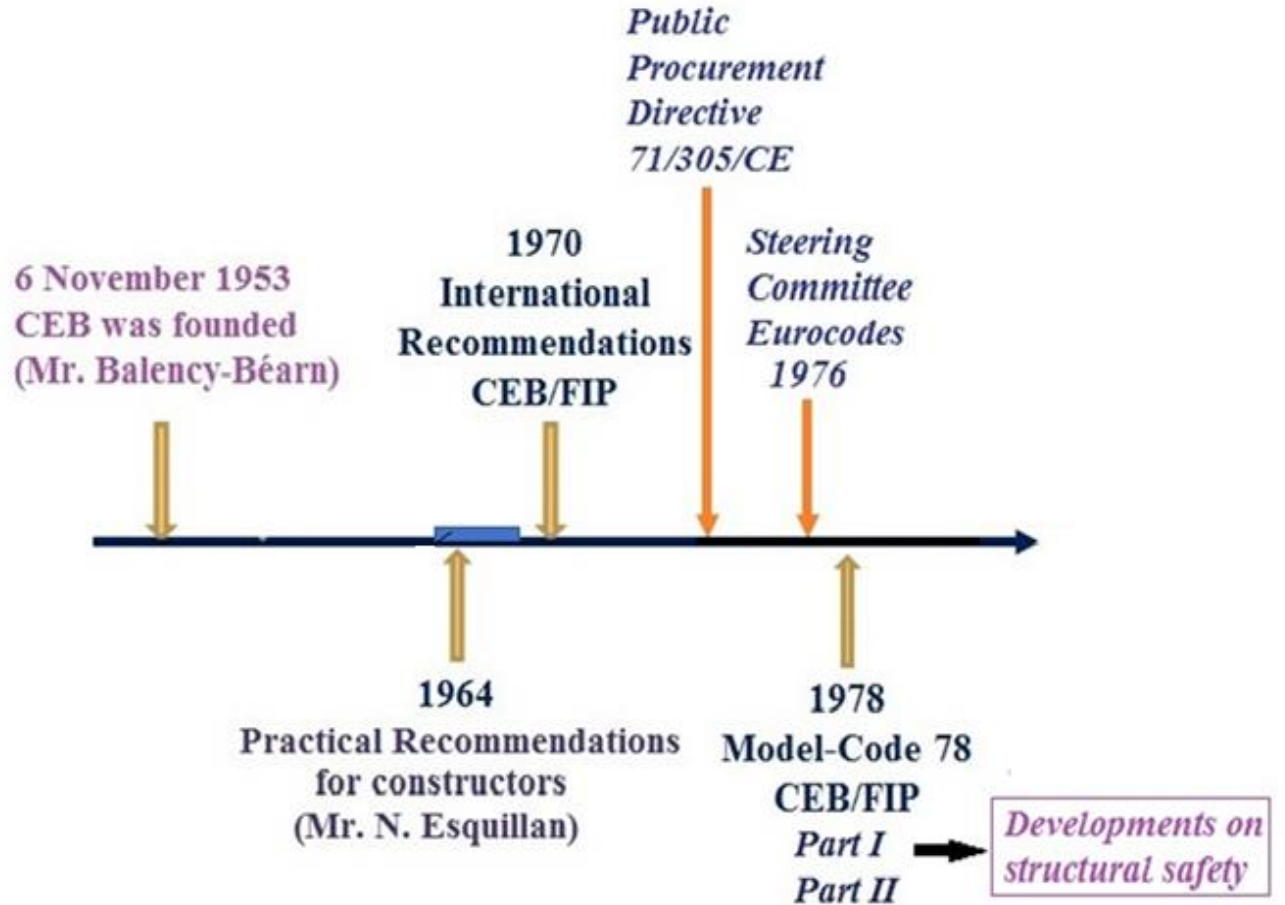
10-11 October 2018, Tirana

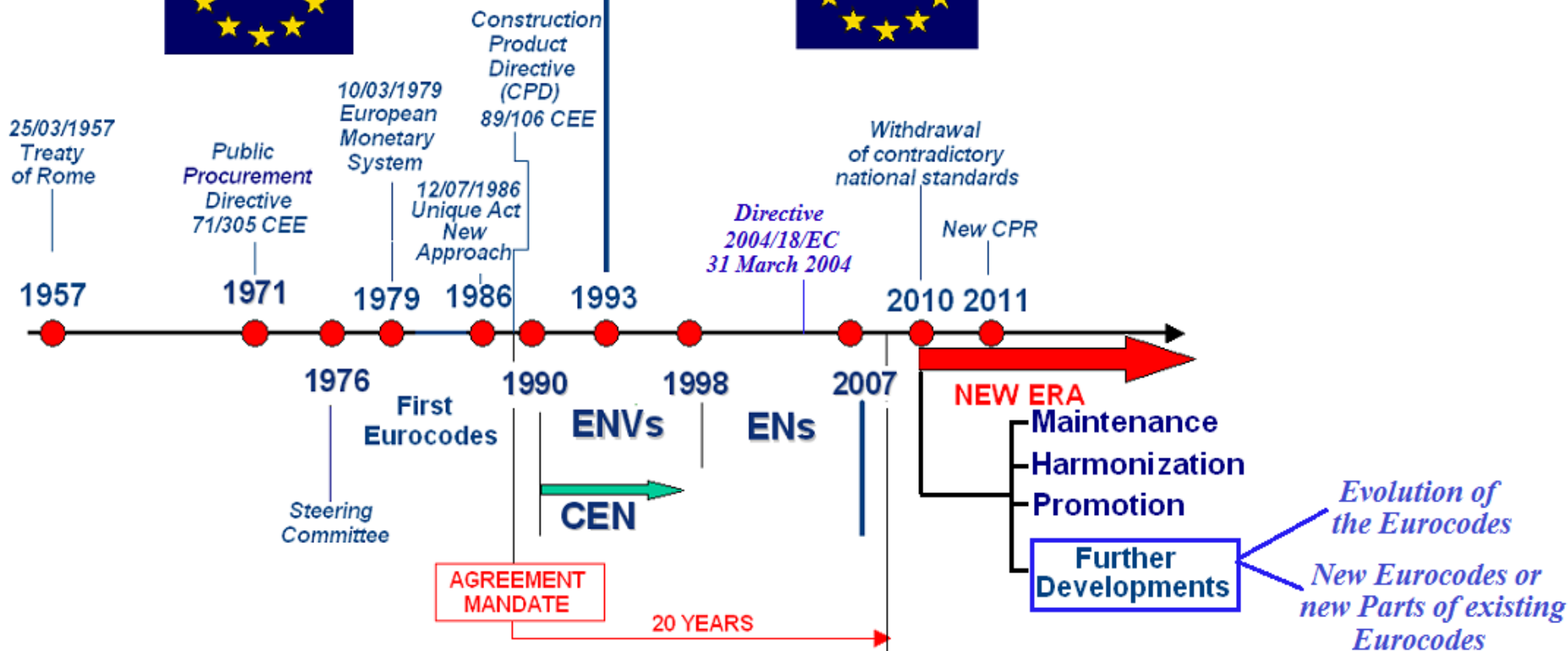
EU MS Case study 4 : France

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Bridges and Roads
Former CEN/TC250 chairman**

A brief history of the reliability approach for construction works





Structural Eurocodes are a set of harmonised technical rules for the design of construction works (at room and at elevated temperatures)

The National Standards implementing Eurocodes may be followed by a National Annex

The National Annex may only contain information on those parameters which are left open in the Eurocode for national choice, known as Nationally Determined Parameters (NDPs)

SOME MAJOR EUROPEAN DOCUMENTS FOR CIVIL ENGINEERING WORKS

1

REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC. Fundamental requirements:

- Mechanical resistance and stability
- Safety in cas of fire
- Hygiène health and environment
- Safety **and accessibility** in use
- Protection against noise
- Energy economy and heat retention
- Sustainable use of natural resources

DPC

2

DIRECTIVE 2014/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on public procurement and repealing Directive 2004/18/EC

3

DIRECTIVE 2014/25/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC

French Documents in connection with European documents

RÈGLEMENT (UE) N ° 305/2011 DU PARLEMENT EUROPÉEN ET DU CONSEIL du 9 mars 2011 établissant des conditions harmonisées de commercialisation pour les produits de construction et abrogeant la directive 89/106/CEE du Conseil (French translation of the European regulation)



Prescription dated 23 July 2015 concerning public contracts



Decree dated 25 March 2016 concerning public contracts (formerly Public works contract regulation dated 1st July 2006) (in connection with Directives 2 and 3)

The use of the Eurocodes is compulsory only **within the framework of the protection towards earthquakes and within the framework of the protection towards fire.**

Two cases where the Eurocodes are of compulsory use in France

French regulation concerning protection against earthquakes

Code of the environment and code of the construction and of the house environment

- Decree Nr. 2010-1264 dated 12 october 2010 for buildings of the class « Normal risk », amended by Orders dated 19/07/2011, 25/10/2012, 15/09/2014
- Decree dated 24/01/2011 giving parasismic rules for some classified installations, amended by orders 13/09/2013, 19/06/2016, 15/02/2018

The class « Normal risk » includes buildings where the seismic risk is limited to their occupants and to their immediate vicinity (4 importance categories)

- Decree dated 26 October 2011 for bridges of the class « Normal risk »
- Decree dated 25 October 2012 amending decree dated 22 October 2010 concerning the design of buildings of the class « Normal risk »
- EC8 shall be the standard to be used in association with other Eurocodes.

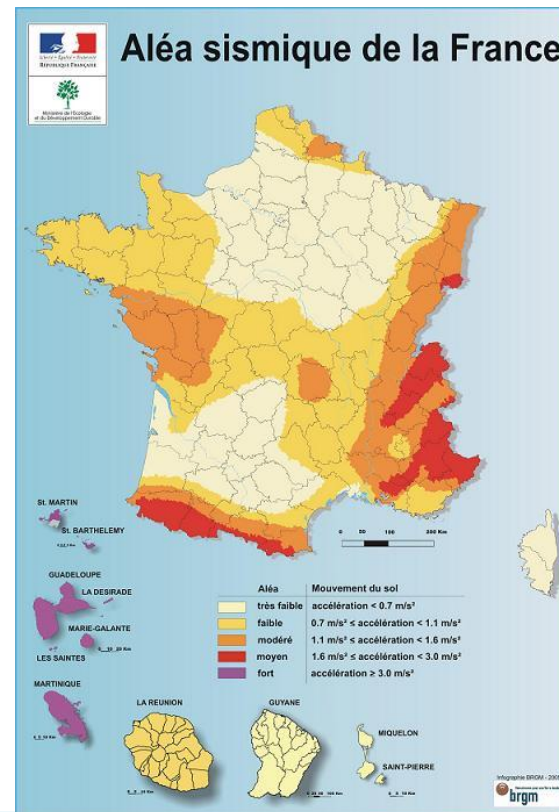
Eurocode 8 shall be applied with a seismic zone map established by National authorities

Seismic hazard of the French Territory

ZONE	a_{gR} (m/s ²)
Zone 1 very low	0,4
Zone 2 Low	0,7
Zone 3 Moderate	1,1
Zone 4 Medium	1,6
Zone 5 High	3,0

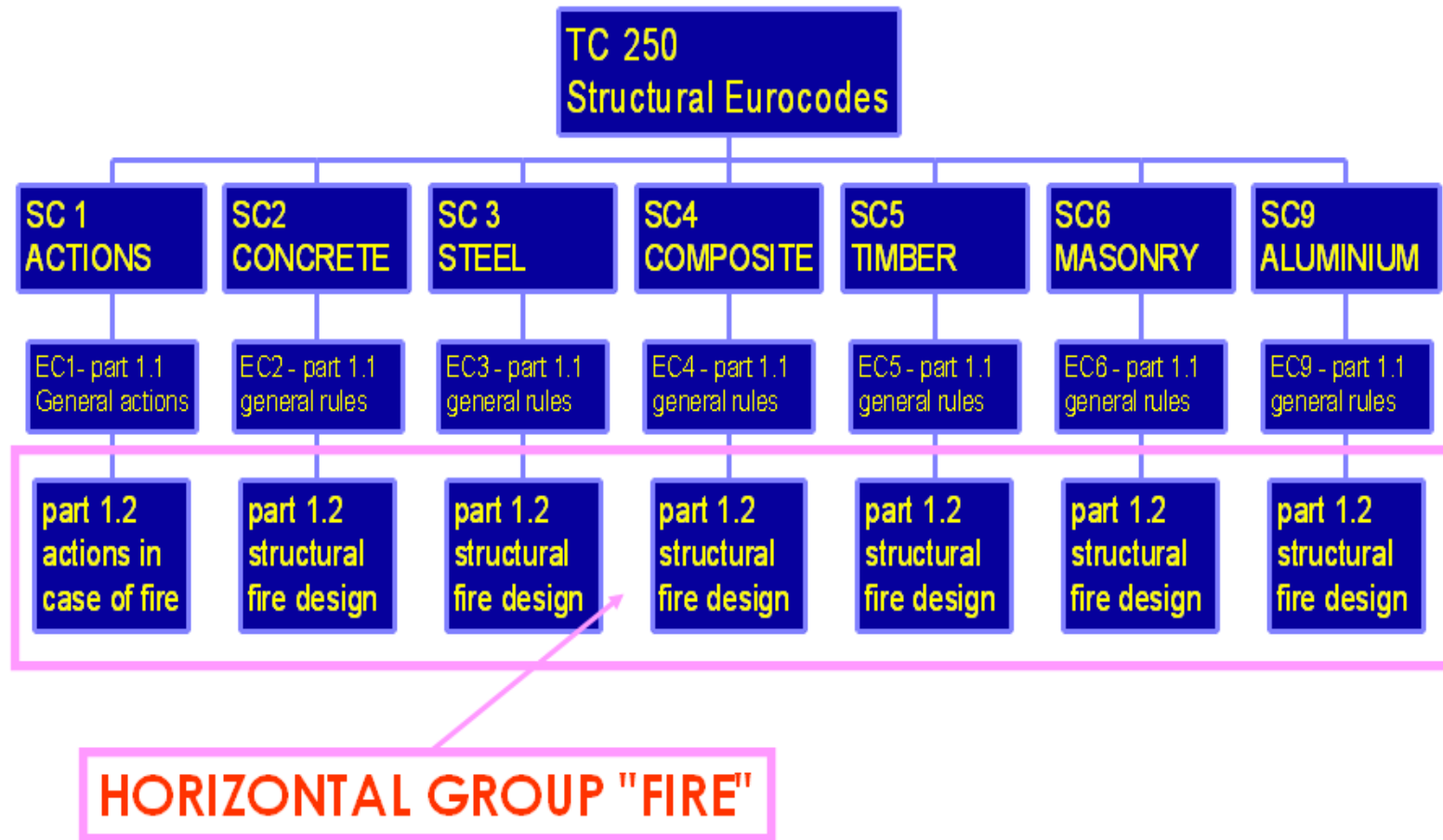
$p_R = 0,1$ (10%) for 50 years

Return period $-50/\ln(0,9) = 475$ years



French regulation concerning safety in case of fire concerning the construction works

- **Load bearing capacity of the construction should be assumed for a specific period of time**
- **The generation and spread of fire and smoke within the works are limited**
- **The spread of fire to neighbouring construction works is limited**
- **The occupants can leave the works or be rescued by other means**
- **The safety of rescue teams is taken into consideration**



The two major documents of the French Administration are:

- Order dated 17 August 2016 concerning the prevention of the disasters in the covered warehouses**
- Law Nr. 2018-727 of August 10th, 2018, for a State in the service of a reliable Society**

All calculations refer to the clauses and methods of the Eurocodes

Some reflexions on the French experience

UNUSUAL STRUCTURES

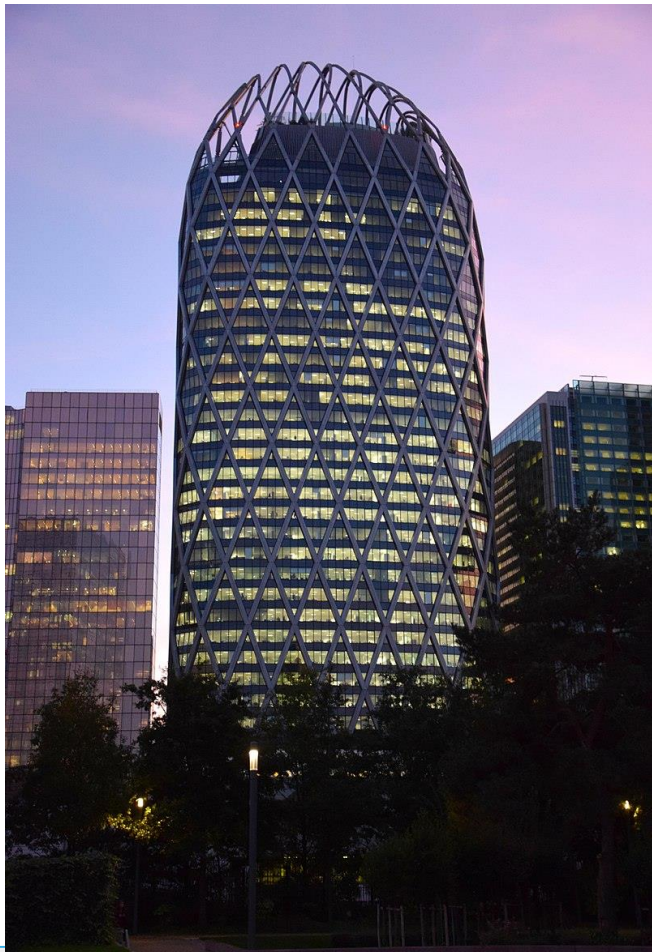
For Engineers, the Eurocodes are reference documents.

There is now a great number of other types of works than buildings and bridges, in particular subterranean works, interfering with ground and former foundations of existing structures. And the creativity of certain audacious architects does not simplify the task of the engineers.

In their design companies, young engineers are in charge to solve very complex problems, without, in many cases, the help of a senior Engineer. For that reason, they should have a good competence in several Eurocodes. Consequently, the Eurocodes system should be perfectly homogeneous. The present system is rather homogeneous and we hope that the new generation will have a higher degree of homogeneity, if the volume of National Annexes can be limited.

EXAMPLES OF CIVIL ENGINEERING WORKS REQUIRING THE KNOWLEDGE OF SEVERAL EUROCODES





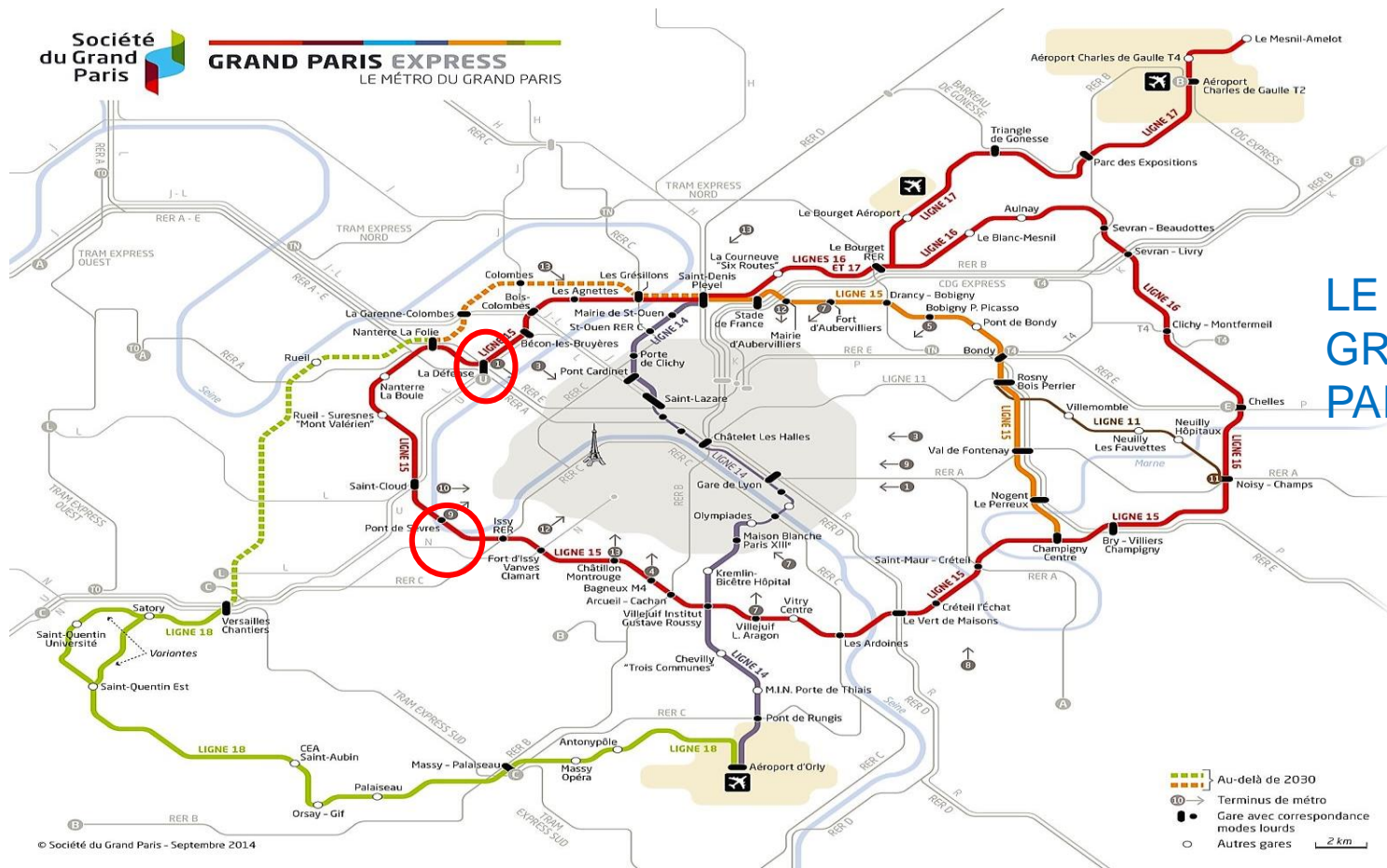
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SPECIAL STRUCTURES



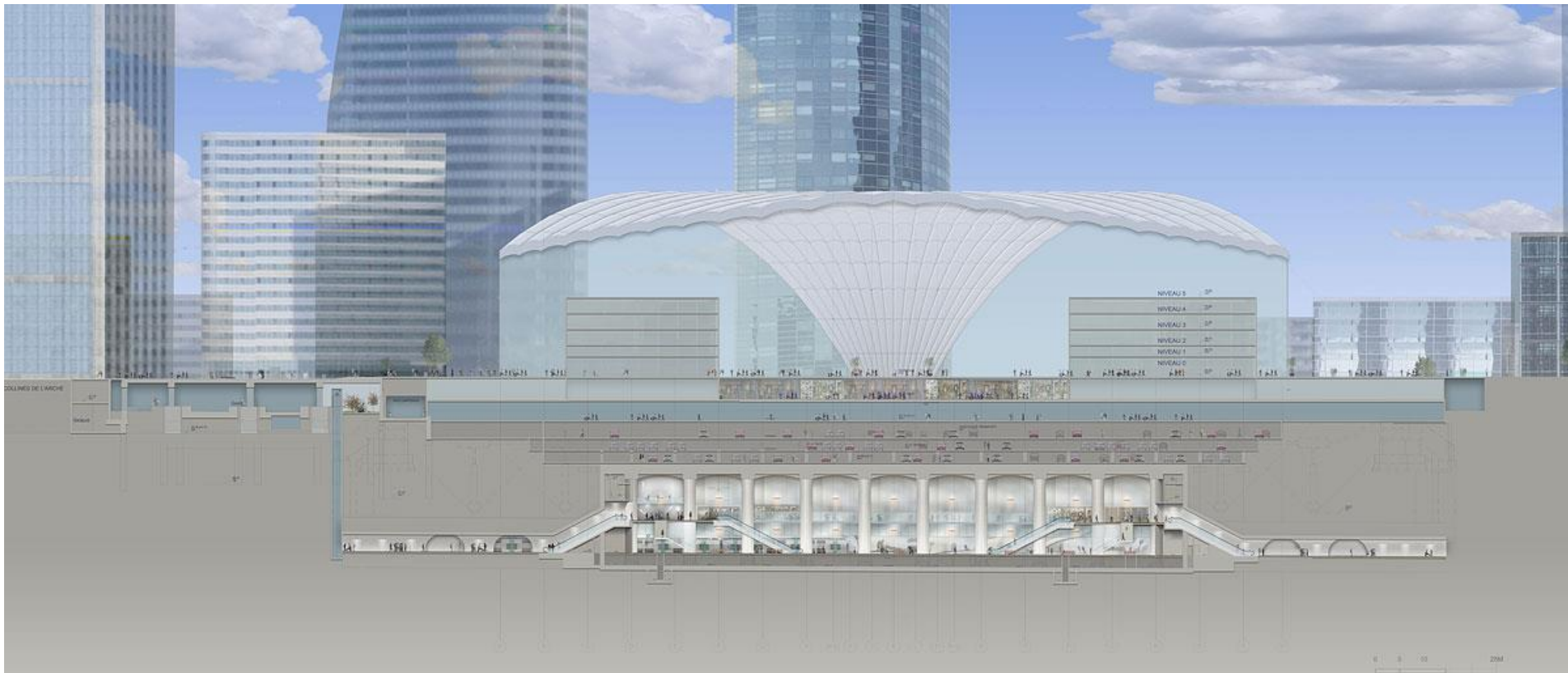
LE
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The CNIT

Center of New
Industries and
Technologies

NEW RAILWAY STATION





Mémorial International de Notre-Dame-de-Lorette ,Philippe Prost architecte © adagp Yann Toma « La Grande Veilleuse » © adagp, 2014 © Karine Warny

**Notre Dame
de Lorette
(600 000
soldiers were
killed)**



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**A good office
desk for those
who learn the
Eurocodes**



**This was Einstein's
buro the day he
died**



**But this is not
the good method
to sleep when
you learn the
Eurocodes**

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Thank you for your attention!

Stay in touch



<http://eurocodes.jrc.ec.europa.eu/>