



welcomes

AHK

Deutsche Handelskammer  
für Spanien

# Siemens Spain: commitment with the country since 128 years



We create **technology** to transform the everyday, for **everyone**



**Dr. Roland Busch**  
President and CEO

- 1847 Siemens Foundation
- 1895 First Siemens Office in Spain
- 1910 Acquisition La Industria Eléctrica, in Cornellà
- 1957 Factory Inauguration in Getafe (near Madrid)
- 1974 Siemens Spain Foundation (as it is today)
- 1992 Siemens Participation in Expo in Sevilla
- 2007 Commissioning of High Speed Trains AVE line MAD-BCN
- 2009 Inauguration L9 Metro Barcelona Section 4
- 2010 Centenary Fàbrica Cornellà – Worldwide Traction CoC
- 2013 Commissioning Traction Systems UT113 for FGC
- 2016 Inauguration L9 Metro Barcelona Section 1
- 2018 Siemens Mobility as an independent company
- 2021 Awarding first “Mobility as a Service” platform by Renfe

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# Siemens CBTC technology supports a strong public transport for Barcelona for Line 9/10 to increase the livability of the city

**1st**

automatic Metro in Spain and 100% automated (GoA4)

**21yrs**

close customer relation to TMB and more to come

**48km**

length in final stage and one of the longest underground metro lines in Europe

**99,9969%**

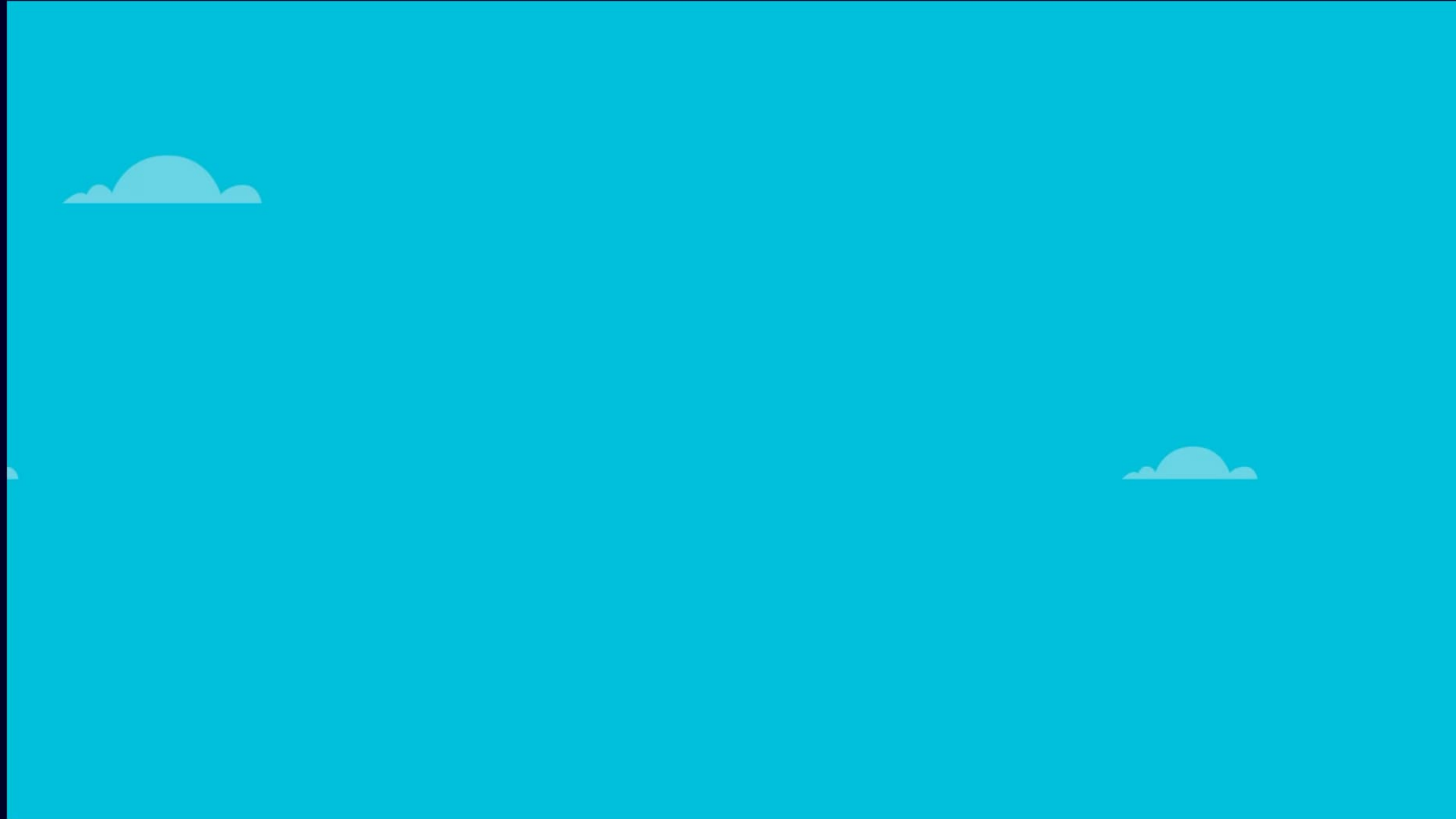
Cumulated availability since 2009 (first revenue service)

**2'06''**

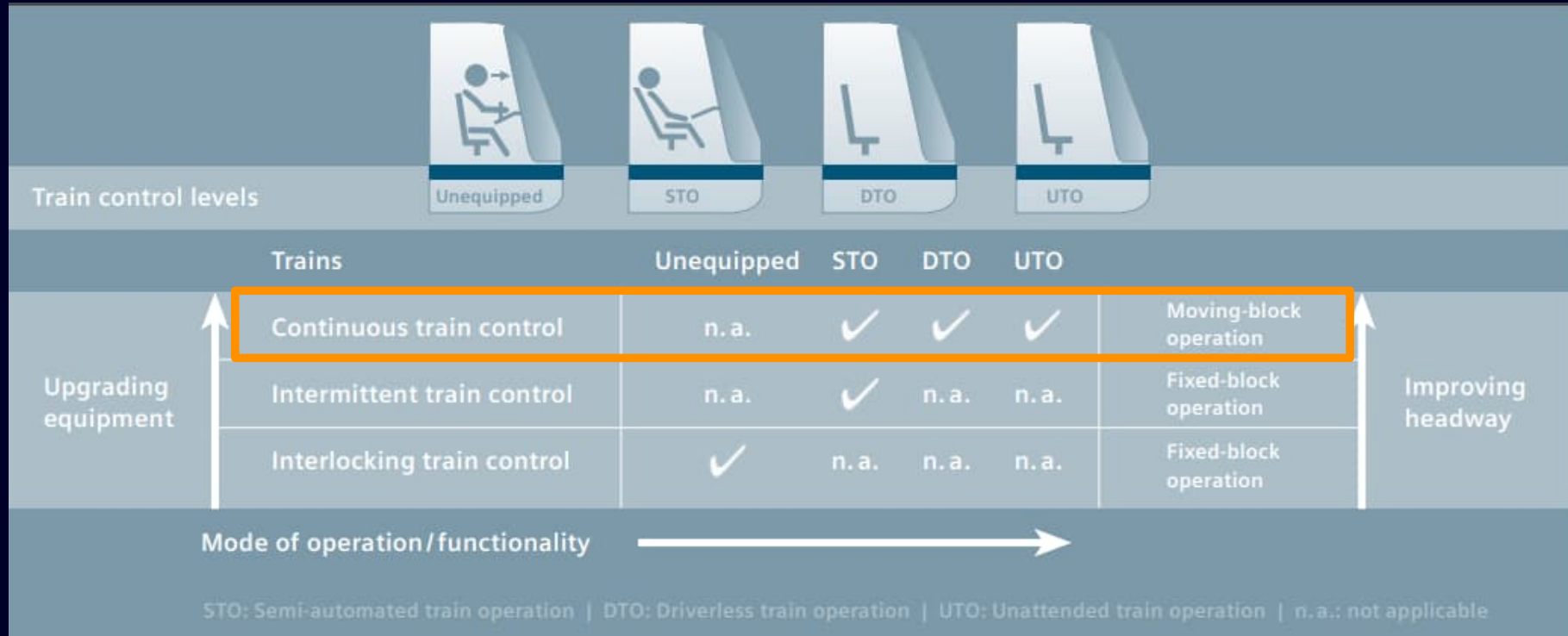
Shortest operational headway among all TMB metro lines

# Siemens Trainguard MT- CBTC

<https://www.mobility.siemens.com/global/en/portfolio/rail-infrastructure/mass-transit/communications-based-train-control-system.html>



# Automation level Barcelona Line 9



## Project overview : main features



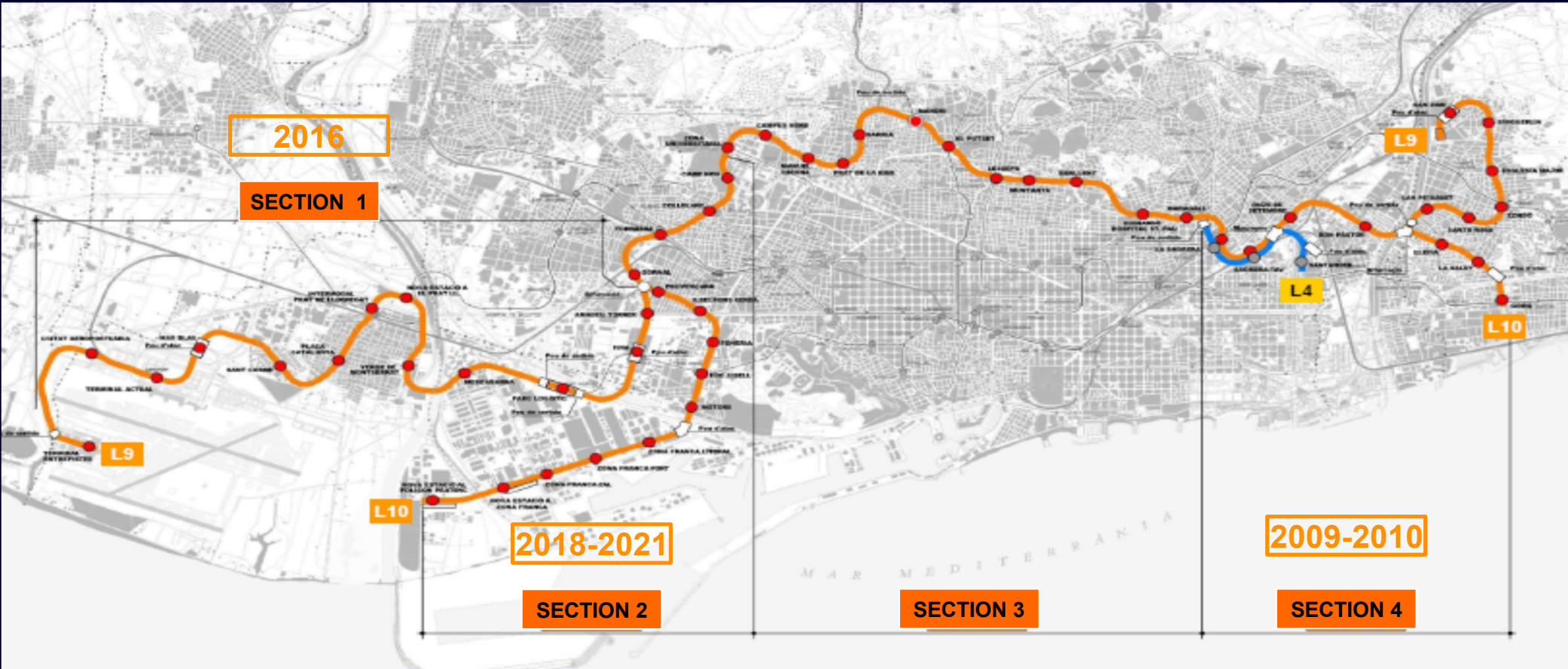
**L9 passes through 5 municipalities of the Barcelona metropolitan area**

**L9 will serve Barcelona uptown and avoid downtown core area**



# Line 9

A driverless metro line meant to be the backbone of the BCN network, serving strategic locations : airport, railways stations, and connection with all metro lines.



# L9 Section 3 – Tunnel Status





## Trainguard MT L9 Metro Barcelona:

First full automated metro in Spain: GoA4 (max. degree of automation)

### Key features of the line:

- 49 km length
- 52 stations (5 open-air, 47 underground)
- Platform length : 100m
- 2 depots and workshops
- Revenue Service, Section 4 (11 Km.) : Dec. '09
- Revenue Service; Section 1 (20 Km) : Feb. '16
- Revenue Service; Section 2 (4 Km) : Sept. '18 – Nov '21

### Rolling Stock

- 50 "ATC" equipped trains
- Trains : 86m length, 2.7 width, 5 cars
- 975 passengers

### Operation characteristics

- Headway : 3 min. in central section
- Commercial speed : 33 km/h
- Maximum speed : 80 km/h
- **Driverless**

### Operation characteristics

- The whole Line 9 expects 335 000 passengers per day



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## L9 Concept



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## L9 Concept

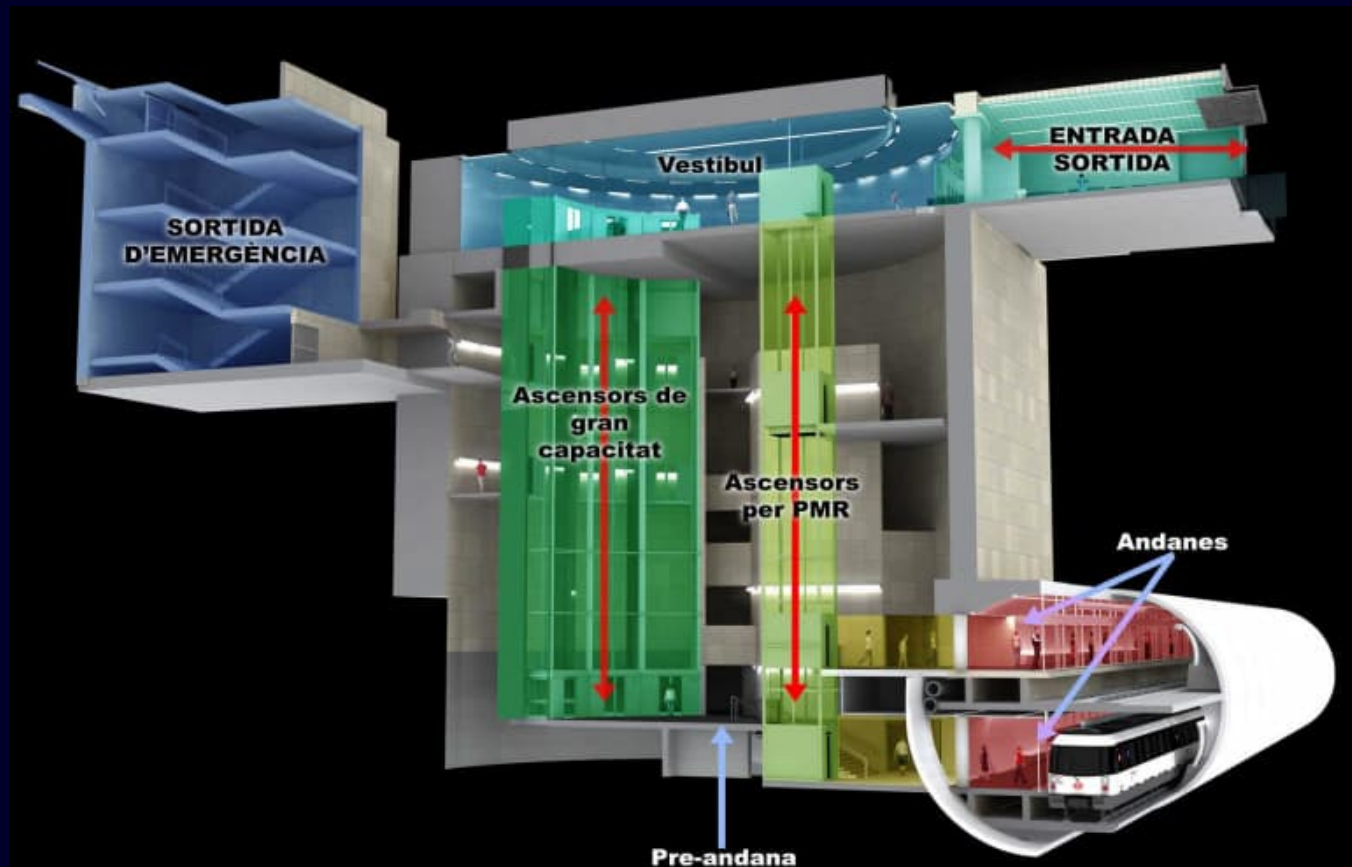


## L9 Concept



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## Project overview : shaft type station - Ø 30m



## Project overview : station in shaft type - Ø 30m

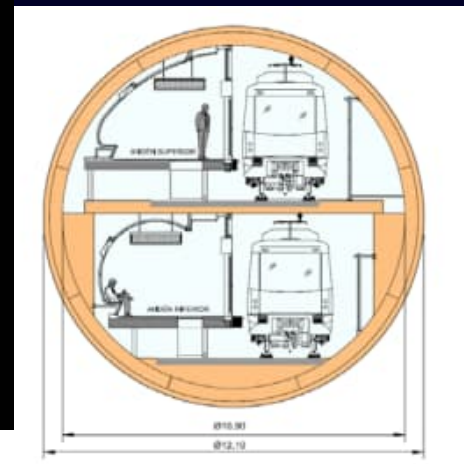
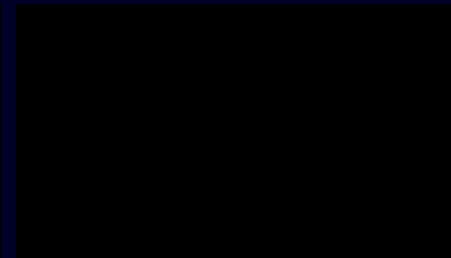
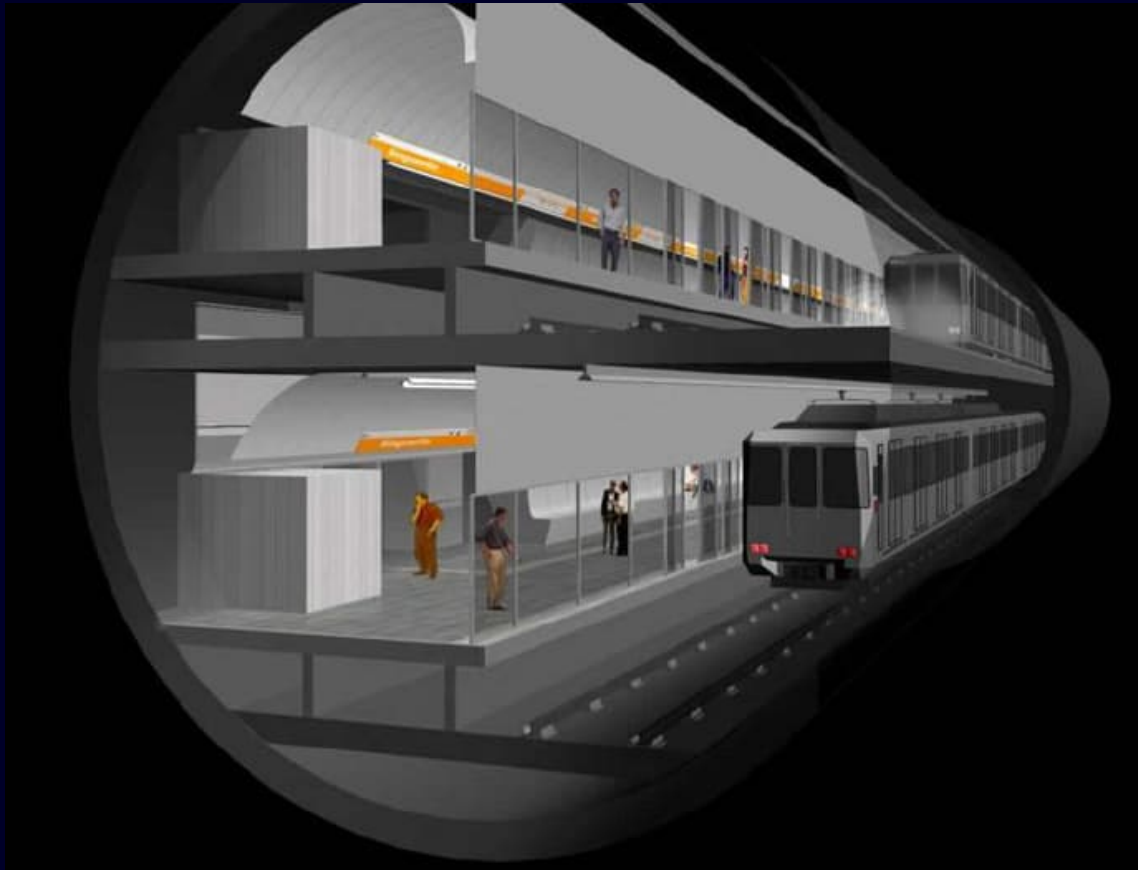


Project overview : station in shaft type - Ø 30m



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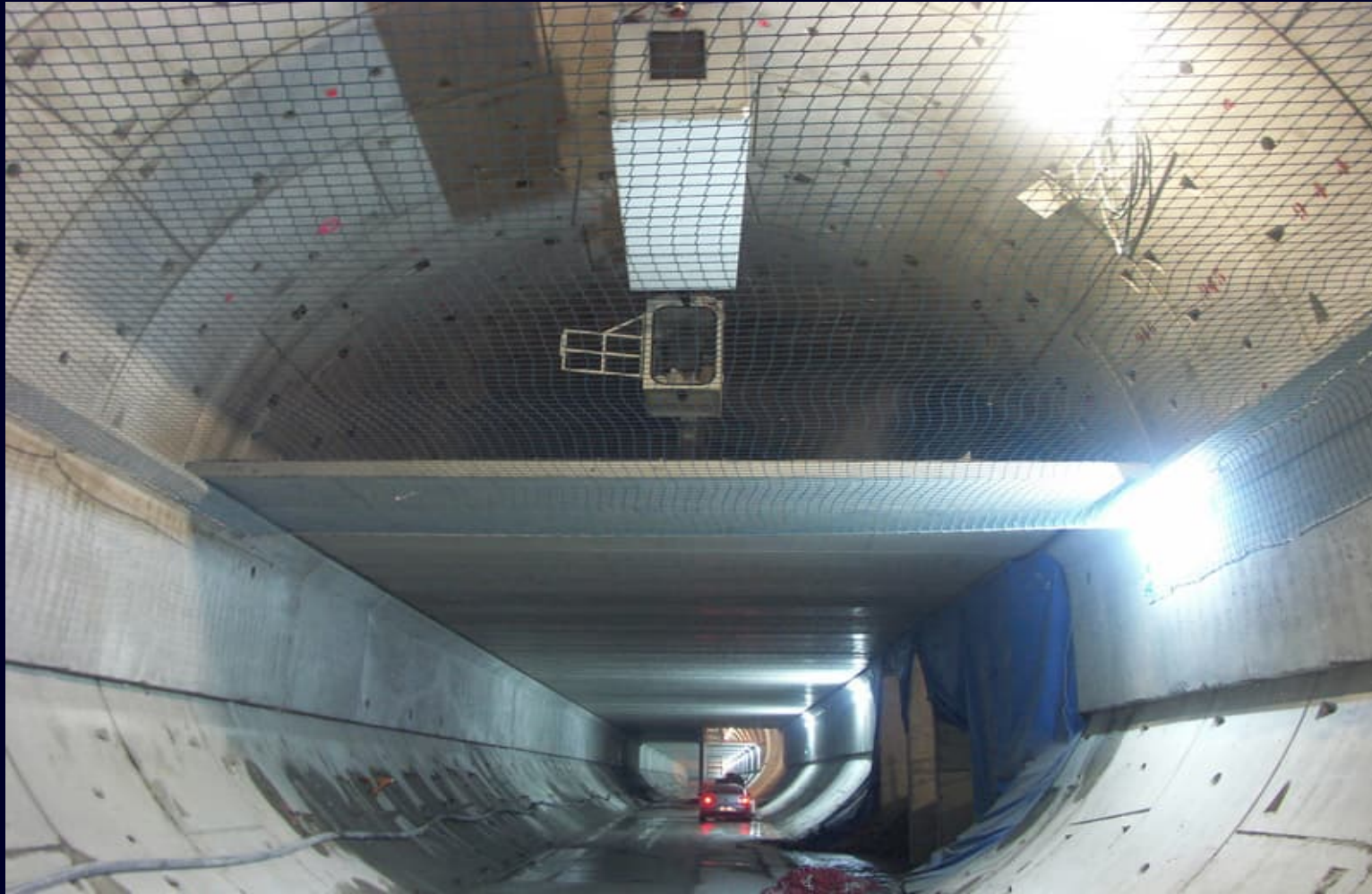
# Project overview : tunnel



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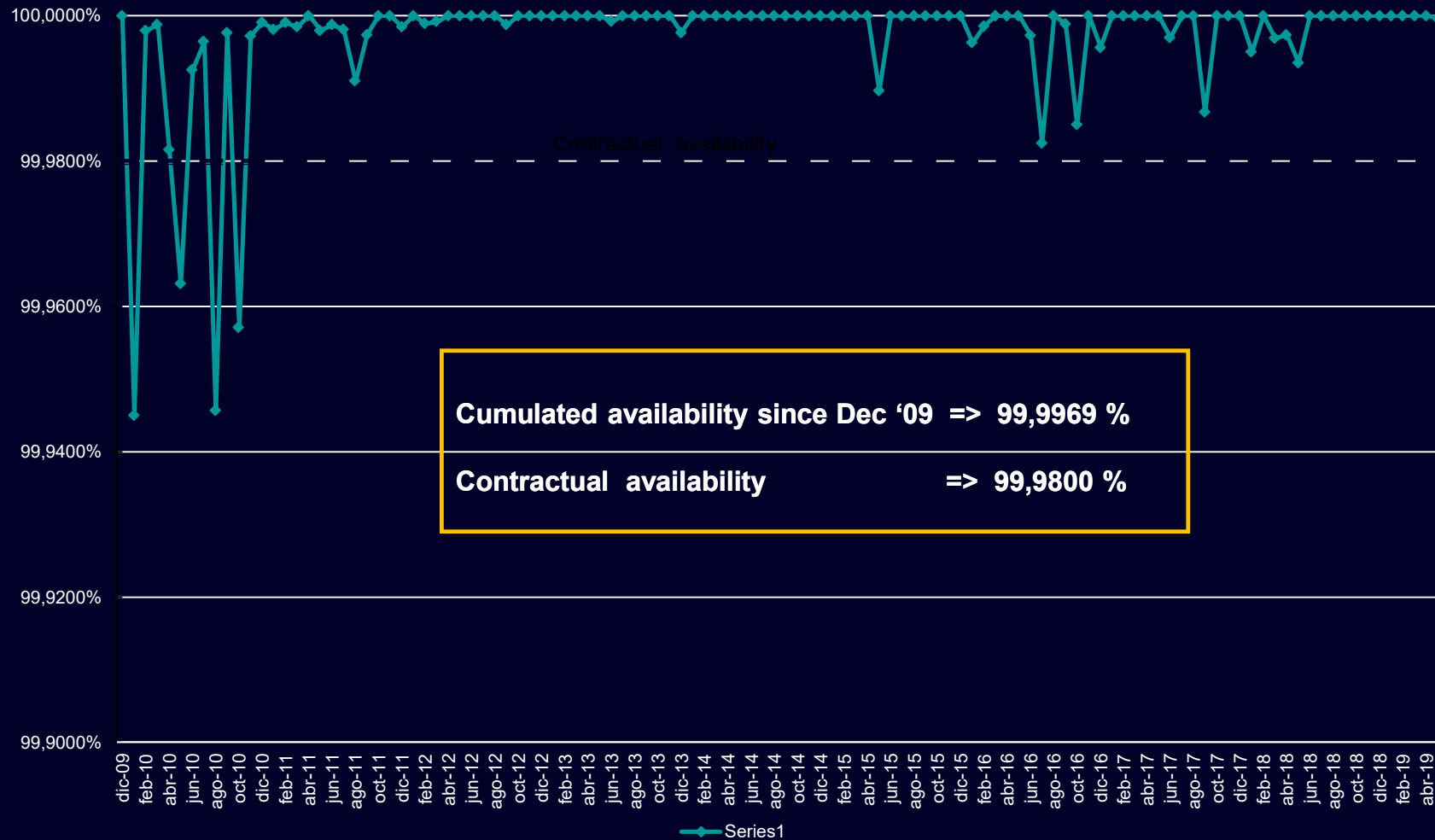


## Project overview: tunnel

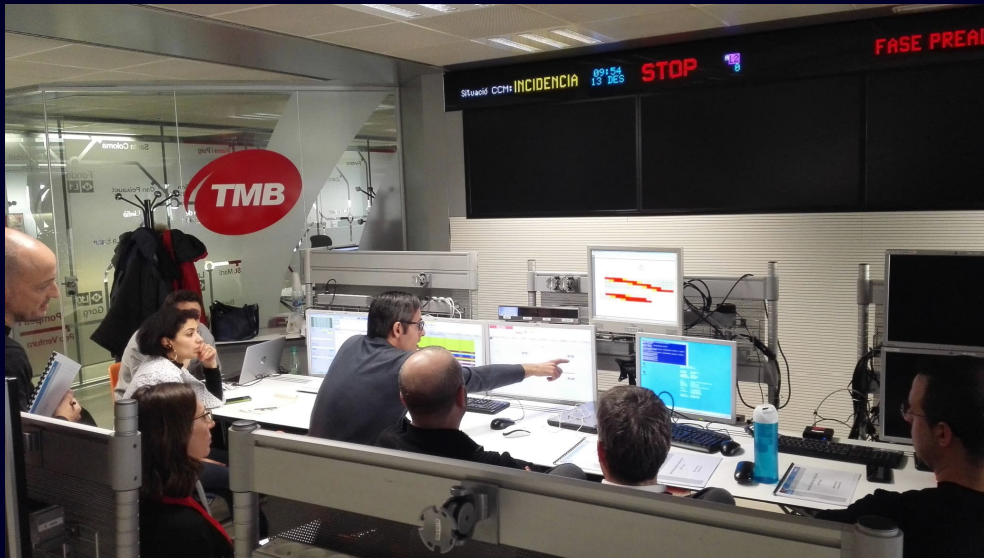


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# Project Highlights: System availability



## Customer + Operator + Siemens = One Team



### Define a system that answers to real operation needs

Operator involved since design phase even if not direct customer



### Ramp up operator knowledge on UTO operation

Joint dynamic operation tests  
Powerful simulator for offline training



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**Vielen Dank für Ihre  
Aufmerksamkeit**

**SIEMENS**