We are here:

- [Tunnel de la Croix Rousse - Lyon]
- [A89: Tunnels de Violy, Bussière et Chalosset]
- [Tunnel du Mont Blanc]
- [Tunnel du Fréjus]
We are here:

- Paris
- Lyon
- Marseille
We are here:

- **Fibro Laser**
- **Opacimeter**
- **SIMULATION**
- **Hypervision Monitoring Training**
- **GTC Automation PLC**

*SIEMENS Ingenuity for Life*
Tunnel Digital twin

1. Faster Engineering for Tunnels with TIA Portal
2. Save time with virtual Tunnel Commissioning
3. Tunnel operator training with digital twin
4. Secure Tunnel
5. Improve tunnel operation and future projects through Tunnel data analysis
**Tunnel Digital twin**

**Digital World**
- Virtual control center
- 3D Modell
- PG
- Digital twin
- Panel
- Tunnel

**Transition**
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**Real World**
- Control center
- Tunnel
- Street-/traffic system that connects different tunnel with each other

**Concept**
- Digital twin is developed with NX

**Engineering**
- 1. Engineering for Tunnel with TIA Portal and other tools

**Commissioning**
- 3. Operator-Training on digital twin

**Operation**
- 4. Secure Tunnel with IT Security
  - After virtual/training and commissioning switch to the real tunnel

**Service**
- 5. Synergy through Data from different objects
  - used for lessons-learned in new projects
1 - Monitoring of road surface
2 - Monitoring of safety barriers
3 - Monitoring of bridges, viaducs
4 - Monitoring of instable hillsides
5 - Monitoring system infrastructure
6 - Monitoring system traffic and freight
7 - Control system for crossing
8 - Environmental monitoring
9 - Tunnel
10 - Traffic monitoring
12 - Video surveillance systems
13 - Weigh in Motion System
Gateway / Internet of Things

Connect different sources and communication networks
Preprocessing / data acquisition with SIMATIC IOT2040e Transfer data to the company database and / or cloud applications
No need to modify existing solutions

SIMATIC IOT2040 is a data gateway for the connection of new automation and retrofitting of existing automation systems
Risk & Specific vulnerabilities

Complex & extended topologies:

- Constant evolution, area open to the public
- Safety, Redundancy, Availability, WIFI
Trusted partner in Cybersecurity

Cybersécurité des systèmes industriels
Siemens, partenaire de confiance

siemens.com/cybersecurity
Purchasing recommendation by the French state – SIMATIC S7-1500: A complete qualified range

Simatic S7-1500 Family
20 products qualifieds

(therefore recommended for purchase for administrations and operators of critical or vital importance OIV)
The DIGITAL at the service of Tunnel Safety

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